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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S_E_M_I_ _M_O_N_T_H_L_Y_ _N_E_W_S_ _L_E_T_T_E_R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Research Dividends

If a business man, while giving his customer excellent value, yet made a profit on two sales sufficient to cover the operating expenses of his business for 75 years, he would be regarded with considerable awe, I believe. If he went on to build those two sales into a proposition that guaranteed him an annual return equivalent to his operating expenses for 75 years--well, he would be called a liar! But such dividends are quite usual in the course of horticultural research activities.

A striking confirmation of this statement came during the past year in a paper contributed to Phytopathology for May, 1937, in which Dr. G. H. Coons, retiring president of the American Phytopathological Society, discussed progress in plant pathology, and in particular the progress that has been made in the control of plant diseases through the creation of resistant varieties. His paper contains a table giving his estimated value of some of these disease-resistant plant creations.

Of particular interest to us are the resistant strains of lettuce and cantaloup we have introduced into commercial culture in California in recent years. Dr. Coons places the value of these new lettuce varieties at $12,487,000 a year; and of the cantaloups at $5,130,000, these sums being the amounts the growers realize over and above what could be expected from the growing of the standard susceptible varieties. In some locations, of course, the susceptible varieties could not be grown at all.

The increased annual return of $17,617,000 from these two new introductions is almost exactly the total of appropriations for fruit and vegetable crop and diseases investigations since the creation of the Department 75 years ago!

MAKE IT BETTER--MAKE IT SAFE--MAKE IT PAY

The research activities of the Division represent an effective combination of teamwork and individual initiative. They constitute a well balanced program of (1) investigations having immediate and practicable objectives and (2) pure research instituted to discover basic facts and principles. The activities are planned to develop better varieties of fruits and vegetables, and to improve methods of growing, handling, transportation, storage and utilization. This is not only to reduce production costs and guarantee higher market grades--the greatest value for the grower's effort--but also to bring about better value for the consumer's dollar.

Our program might be summarized in a paraphrase of the words of Dr. C. R. Ball, discussing before the Graduate School the Department's history and the development of its objectives: Make it better--by improving varieties and methods; make it safe--by developing adequate control methods for plant diseases or through the introduction or creation by breeding or selection of disease-resistant varieties; and make it pay--by increasing efficiency in methods of production, handling, storage and utilization.

DISEASE-RESISTANT VARIETIES

The creation of a mildew-resistant cantaloup is an excellent illustration of the effective manner in which pure science and practical objectives may be combined. The work was started in 1926 by the late Dr. J. T. Rosa of the University of California, who was joined by Dr. Ivan C. Jagger of our staff. By 1928 we were beginning to get valuable results. In that year a number of the plants brought in from the Old World for testing revealed considerable disease resistance. None of them, however, were of commercial value. Rosa and Jagger had found, however, that mildew resistance is inherited as a simple Mendelian dominant factor. With this knowledge we were able to go ahead confidentially with the backcrossing of hybrids and commercial sorts and by 1934 had a new variety combining disease resistance with excellent commercial quality. During the 1937 season fully 90 percent of the Imperial Valley cantaloup acreage was planted to our new No. 45 Mildew-Resistant Cantaloup.

This new cantaloup shows how effectively teamwork and individual efforts are combined. The job wasn't complete when Jagger got the new melon. Mr. Fisher and the workers of our handling, transportation and storage and market disease section came forward to demonstrate that the new melon could be allowed to reach full maturity on the vine and then by proper precooling and transit refrigeration be shipped to New York City, say, and remain in good marketable condition long enough for all trade demands.

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It should be remembered that scarcely two years ago the California cantaloup industry appeared on the verge of extinction because of the powdery mildew disease. Powdery Mildew Resistant Cantaloup No. 45 has reestablished the industry! Before its introduction mildew had forced the picking of the older, standard, varieties earlier and earlier until people would not buy them, and were saying that it was no longer possible to get melons fit to eat!

OUR SEVENTY FIFTH BIRTHDAY

Seventy-five years ago, May 15, 1862, the Act creating the U.S. Department of Agriculture was signed by President Lincoln, and $64,000 made available for its work. This wasn't the first Federal aid for agriculture, of course, though in the early days the Government contributed little in the form of money. Many of our citizens demonstrated their friendliness, however. Franklin and others, traveling abroad, often sent back seeds and plants they thought might prove useful here. Later Henry L. Ellsworth, Commissioner of Patents, undertook the distribution of such material. It was on his recommendation that in 1839 Congress appropriated $1,000 for collecting and distributing seeds and plants, and for prosecuting general agricultural investigations.

Federal aid to agriculture was administered through the Patent Office from 1839 to 1862, probably because during that period most of the patents issued were concerned with agricultural processes. There was nothing of the theoretical in the early work of the Department. Then as now activities were concerned with definite needs. Of course, the higher officials were able to take a little more active part in the work than is possible under present conditions! According to the records, they were sometimes a trifle too active for their own welfare. It was in July, 1866, for example, that the first Commissioner of Agriculture had a sunstroke while out in the field directing workmen in an effort to save some wheat, which had been cut, from injury by a threatened thunderstorm. He never fully recovered.

Even as late as the Civil War, more than half of the workers of the country were engaged in agriculture. That there are now five times as many workers in manufacturing and ten times as many in trade and transportation as then, is due in no small part to the increased efficiency resulting from agricultural research, releasing these workers from farm activities. In 1787, the year the Constitution was framed, the surplus food production by 19 farmers would feed but one city person; now 19 farm workers produce enough for 66.

Horticultural investigations date back to the very beginning of the Department's activities. In fact, a horticulturist, William Saunders, was probably the first technical employee, or at least one of the earliest. He was appointed superintendent of the propagating garden shortly after the fiscal year began, in 1862.

The debt that American agriculture owes to horticultural research activities is evident from the fact that every one of our important fruit and vegetable crops has either been brought in from abroad, or developed here by breeding and by selection. The apple, pear, peach, cherry, citrus fruits--not one of these is native to this country. The strawberry is our own, and much of the work of developing cultivated varieties has been done here, but the fact remains that the modern strawberry is derived from a cross of our wild meadow and beach strawberries made in Europe.

Most vegetables grown and used by the Indians were taken over quite readily by our earlier settlers, but those later introduced, or that had been neglected by the Indians, were slow in coming into general use. The potato, originating in western South America, and the tomato, of tropical American origin, had to be taken abroad to win a reputation before they were accepted with favor by our own people.

APPLES

This doesn't mean that we have been substituting an off-with-the-old-and-on-with-the-new program for the tried and true policy of testing all things horticultural and holding fast to those that are good. The apple is a witness that we have done nothing of the sort. Our leading commercial apple varieties go back a good many years. Benjamin Franklin, in London in 1759, was eating Yellow Newtown apples sent him from this country. The Winesap is 150 years old, and the York Imperial almost as venerable. The Baldwin goes back to 1740. It was in 1870 that the Department brought in the Yellow Transparent from Russia. In 1887 the Stayman Winesap made its debut; and that youngster, Delicious, was born in 1881, though it was not christened until 1895.

Apples are still our most important fruit crop, the annual value going up as high as $200,000,000 in some years. The United States is the largest producer and exporter of apples, about 30 percent of the world's production being our share at present. Apples have been grown here since colonial times, though commercial production dates from the middle of the last century, when orchards were being developed in western New York. Apple trees were bearing fruit near Vancouver, Wash. as early as 1834, and during the California gold rush in 1849, Oregon apples sold at $10.00 a bushel!

Eternal vigilance is the price the apple grower must pay for continued dominance of the fruit field, however. Still "King of fruits," the apple is meeting strong competition, even though a good bit of it is indirect. The orange and grapefruit, for example, might not be regarded by most people as rivals of the apple, but, as our colleague H. P. Gould aptly remarks, "One thing is sure--when folks are eating citrus fruits they are not eating apples."

A somewhat more tangible proof of the effect of indirect competition is found in production statistics. These show the commercial apple crop of the United States as 80 million bushels annually for the period from 1916 to 1920, whereas the average annual production for the years from 1931 to 1935 was but 86 million bushels. With an increased population, we should have used a lot more apples from 1931-35 than we did from 1916-1920.

On the other hand, the influence of research activities is clearly seen in the improved efficiency of production, and the trend toward standardization and higher quality. We now produce an average of 1.64 bushels of apples per tree in our commercial orchards; in 1910 the production was but 1.02 bushels. Thus, a considerable reduced number of trees are producing approximately the same commercial crop.

The tendency toward standardization is seen in the fact that in the great apple producing regions of the Pacific Northwest you will find but half a dozen varieties grown extensively in the larger commercial orchards. In New York and New England a few varieties predominate. And less than a dozen really important varieties are to be found in the commercial orchards of the Shenandoah-Potomac-Cumberland section.

The 1892 commercial nursery catalogues listed more than 700 apple varieties; by 1910, the number had been reduced to 472; and a recent examination of leading catalogues showed but 201 varieties listed.

INTERNAL CORK OF APPLES

An especially encouraging development of the past year in connection with the Division's work on apples, has been the outstanding results of the tests for the control of internal cork or dry rot. This trouble has been causing serious losses to growers in the Shenandoah-Cumberland valley region, and to apple and pear orchards on the Pacific Coast. Various measures have been tried in the past--fertilizing, pruning, irrigating--with unsatisfactory results.

Working in the Shenandoah-Cumberland region, Dr. Magness and his associates have found that by placing boric-acid crystals in the trunks of the trees, or by making applications in larger quantities on the soil beneath the trees, practically complete control may be effected.

In this section the worst affected varieties are the Ben Davis group, or Ben Davis, Gano, and Black Ben Davis. On many apparently strong soils the fruit of these varieties has been so badly affected in recent years that it has been unsuitable for packing. We have found applications of boron to be completely effective in correcting the condition.

"INSIDE CONTROL"

Increasing importance continues to be placed on the fact that the returns to growers, and the quality of the fruit and vegetable product delivered to the consumer, depend about as much on efficient methods of harvesting, handling, transportation and storage, as upon efficiency in field production.

In Technical Bulletin No. 550, "Protection of Apples and Pears in Transit from the Pacific Northwest during the Winter Months," E. D. Mallison, E. A. Gorman, Jr. and W. V. Hukill touch upon the interesting developments in connection with "inside control." This is a coined term used to designate a method of lighting and extinguishing car heaters according to the need for heat as determined by the temperature of the air at critical points inside (within the loading space) the car. Under Carriers' Protective Service now provided by the railroads, the heaters are operated according to outside temperatures. The difference can be realized if one imagines the results of operating the heaters and ventilators of a passenger train at division points on the basis of outside weather conditions at the division points rather than with regard to the comfort of the passengers en route between these points.

The difference in the (1) thickness of the insulation and efficiency of the refrigerator cars; (2) rate of burning of the charcoal heaters; (3) average temperature of the fruit at the time of loading; and (4) weather conditions en route, make it necessary to handle each car individually in accordance with its need for protection. The results with "inside control" have been so favorable that it is being recommended as a general practice, with the details, of course, to be worked out by each carrier to suit its own conditions. Its purpose is to add only the minimum amount of heat required for the maintenance of temperatures as close as possible to the optimum for fruit storage.

PACKAGES--AND PRECOOLING

It was Mallison and Hukill, too, who pointed out sometime ago that while a large amount of money and much effort have been expended in the development of systems of precooling fruit and vegetables in the refrigerator cars, very little attention has been given to the packages and its effect on the rate of cooling the contents. In addition to talking about the matter, Mallison has done something about it! He has devised a peach basket that permits the fruit to cool three times faster than in ordinary containers. Using the new basket it will be possible to pick more mature fruit and the consumer will have something closely approaching a tree-ripened peach.

We are also preparing to recommend the use of an improved container for strawberries--something a good bit better than the present standard crate, we think.

FLOWERS BY AIR

An interesting transportation demonstration, showing a new way of using standard containers, was made under the direction of Mr. Fisher by R. C. Wright and W. V. Hukill in connection with the shipment of flowers from the Pacific Coast to Washington, D. C. Of course, flowers have been shipped by air express from the Pacific Coast to the eastern United States before, but up to the present the shippers have been counting on a rather high percentage of loss through freezing en route. We undertook to provide a container that would be a protection against such losses, a problem complicated by the fact that flowers represent very little solid material and so have but a small amount of stored heat. Ordinary insulation is not enough to protect them.

The containers used in the demonstration, and in which cut flowers came through in excellent condition, were ordinary flower boxes. These were wrapped with waxed paper and 30 layers of wet newspaper, and placed in a waterproofed corrugated paper box and wrapped in 15 layers of dry newspaper. When the temperature en route dropped low enough, the wet paper would freeze and liberate heat (heat of solidification) being confined by the dry paper insulation kept the contents of the package at about 32°F. for several hours. The danger point is 30° or lower. From the few demonstrations made, this method appears to be practicable as a safeguard against freezing injury to the flowers during ordinary transcontinental shipment by air express.

NEW LETTUCE VARIETY FOR EASTERN UNITED STATES

Until recent years, almost the entire crop of lettuce produced in New York, New Jersey, North and South Carolina, Florida and other parts of the East was of the "butter-head" type. With the increased demand for the hard-headed New York ("Iceberg") type, eastern growers have been confronted with the problem of obtaining adapted strains of this type. The strains of Iceberg from California tested so far have almost without exception failed to produce profitable crops.

Ross C. Thompson has apparently supplied a part of the answer. As a result of lettuce breeding work started at Arlington Farm in 1929, and moved to Beltsville in 1935, we have furnished growers a new variety of the Iceberg type, closely resembling the lettuce shipped into the eastern markets from California; and we have other promising new varieties about ready for introduction. Tests so far indicate that these new varieties are more resistant to heat, slower to shoot to seed, and better adapted to eastern soil conditions and climate than the present commercial strains of crisp-head lettuce. Growers are enthusiastic over the possibilities of our Columbia No. 1, whose parents are the old standard summer head variety Hanson and the widely grown variety New York that has long been the leading sort in California.

A SATISFACTORY LEMON FOR FLORIDA

A report from T. Ralph Robinson, stationed at Orlando, and in close touch with horticultural conditions throughout the State, indicates that we have supplied Florida with the first-class lemon it has long desired. This is the Perrine, a cross between the West Indian lime and the Genoa lemon that looks and behaves like a lemon.

Robinson tells of a 5-acre grapefruit grove topworked to the Perrine three years ago. The crop at the time he wrote had netted $2,000 for the season, with a third of the fruit still on the trees! The average yield in this tract has been from 5 to 6 bushels to the tree, with some trees producing as much as 8 to 10 bushels, an amazing record even where, as in this instance, the Perrine is growing on vigorous root systems, 10 to 12 years old. The fruit shows no scab or melanose, so practically no expense for spraying has been necessary.

In the past, of course, Florida has been unable to grow lemons satisfactorily, and so has imported as much as $1,800,000 worth in single years, largely from Italy. The Perrine should take care of this home demand, and neighboring States offer a ready market for any surplus lemons produced. In other words, it appears that in the Perrine we have a dividend that will more than pay the operating costs of the Division from year to year, if not for 75 years at once!

T-BUD MAKES NEW GRAPES BEAR IN 18 MONTHS

At the U. S. Horticultural Field Station vineyard, Fresno, Calif., Elmer Snyder and Frank N. Harmon have made the surprising demonstration that with the use of the T-bud method it is possible to bring seedling grapes of California varieties to bearing in 18 months instead of the usual 4 or 5 years!

The seeds are planted about the first of February in a greenhouse flat. A few weeks later, when the plant has come up and started a few leaves, it is transferred to an individual gallon can, or a 6- or 8-inch greenhouse pot. By the latter part of May the seedling is usually from 12 to 16 inches high and 3 to 4 buds may be obtained from it. These are T-budded into vigorous root stocks or bearing vines, wrapped securely with rubber grafting tape, and the cane pinched off at the tip to check terminal growth.

A week or 10 days later the shoot is cut back to the bud, leaving some of the original leaves as shade. As 3 or 4 buds are inserted on each shoot, the weaker buds are pinched back and only the strongest allowed to grow. These shoots, at Fresno, bear fruit in August of the second year--about 18 months from the time the seeds were planted.

NEMATODE-RESISTANT PEACH STOCKS

For a number of years members of our nursery stock investigations section have been keeping their eyes open in the hope of finding a nematode-resistant peach stock.

Plants from various parts of the world have been tried out to discover whether any of them would resist the attacks of the nematode. Now we have found not one, but two resistant stocks, a discovery that appears to insure the continuation of successful commercial peach growing in sections, particularly in the South, where the industry has been threatened with destruction by attacks of root-knot caused by nematodes.

In connection with Dr. Lee M. Hutchins' work at Fort Valley, Ga. we planted out in the late winter of 1928 a collection of Elberta peach trees on a Shalil stock that had impressed Dr. Hutchins very favorably when he studied it at the U. S. Plant Introduction Garden, Chico, Calif. This stock comes from the Kurram Valley, Northwest Frontier Province, India, and can be propagated from seed. By 1931 the trees were among the best at Fort Valley--and showed complete resistance to root-knot attacks even in soils heavily infested with nematodes!

This observation was in complete agreement with that made a few years earlier by L. B. Scott, formerly of this Division, who was working at the time on the other side of the Continent, at Shafter, Calif. In 1929, Dr. W. P. Tufts of the College of California, University of California, branch station at Davis, Calif., also reported the nema resistance of Shalil. Thus, the nematode resistance of this peach has been confirmed by at least three workers independently. Dr. Hutchins' work discloses that in addition to nematode resistance the Shalil has other qualities to recommend it as a peach stock.

Dr. Hutchins also reports that a hybrid of the Bolivian Cling peach by Quetta nectarine is also resistant to the nematode. Elberta peach trees on this hybrid stock have been planted out in different parts of the Fort Valley orchards and for the past five years have not only made excellent growth, but have remained entirely free from root-knot even when growing in heavily infested soil along with standard peach varieties that were being severely attacked by the nematodes.

Nematodes, of course, cause galls or knots on the roots of many crops, and some shrubs and trees. Some plants are resistant and by planting these as crops it is possible to starve the nematodes to a point where susceptible crops may be grown for a season or two without serious damage. This form of control, however, is not feasible with an orchard crop such as peaches, hence the importance of these new nematode-resistant peach stocks.

THE USE OF ETHYLENE GAS IN PECAN HARVESTING

Discussing the Yuma, Ariz., pecan crop, A. H. Finch has pointed out that in certain sections the pecans do not mature satisfactorily. The shucks fail to loosen so as to release the nuts properly colored and marked. This occurs quite frequently in some sections, occasionally in others. The failure of the shucks to open and release the nuts results in the pecans germinating on the tree, destroying their market value.

Preliminary tests in 1935 indicated that ethylene gas might perhaps be used to advantage in causing the pecan shucks to separate from the shell, and the studies of the 1936 season so far confirmed this belief that the method was recommended to the Yuma pecan growers. It will not solve the problem of poorly filled nuts, nor will it transform a poor variety into a good one, but it promises to enable the growers to get the best possible results from their crops, so far as harvesting problems are concerned.

It is being suggested that harvesting in the Yuma area begin as soon as the kernels appear to have developed their maximum filling and quality, regardless of the condition of shuck opening, say about the time 50 percent of the shucks are loosening and when pre-harvest germination begins. For varieties that germinate badly (Burkett and Halbert, for example) the use of large picking crews is desirable in order that the harvesting may be done promptly. It appears that the Yuma pecan growers must get in the habit of regarding their pecan crop as a perishable one, to be handled accordingly.

The nuts, incidentally, should not be threshed from the trees. The normal uniform coloring of the shell is dependent upon its drying in contact with the shuck and threshing will cause some of the shucks to come off and prevent the nuts from coloring satisfactorily. The nuts should be stripped from the trees and allowed to fall on sheets spread below.

The method of using ethylene gas is to place the nuts with the shucks still on them in a tightly closed room, running in enough gas to give 1-1,000 concentration. The room is kept closed for about 8 hours and then ventilated; again closed, and another charge of ethylene run in, with the room again being closed tightly for 8 hours. This is repeated until the chucks loosen--for 24 to 48 hours. If the room is not completely gas-tight, it may be necessary to give additional charges of the ethylene.

Once the shucks are loosened, the nuts are allowed to dry. This takes several days, depending upon varying conditions. After drying, the shucks are easily removed, and the nuts are then ready for grading, packing and shipping.

WIDER SPACING OF PECAN TREES NECESSARY

The pecan industry of the United States has suffered because of its too rapid success! In the early days the yield and prices were all that could be desired. This quite naturally led to the belief that the trees would bear even more and better nuts as they grew older and larger, and that prices might quite likely be better. These hopes have not been realized, and thereby hangs a tale!

The studies of Dr. H. L. Crane and his staff have shown clearly that for optimum development and yield pecan trees need a lot of space, plenty of sunshine, and free air circulation. They do not get these in the average orchard, for a serious mistake is usually made in estimating the spread of the roots and the trees need for growing space. The root system of the pecan actually exhausts the soil of moisture and other constituents for fertility for a distance fully twice as great as the spread of the tree's branches.

Wider spacing of trees is also desirable to provide sunlight and a free movement of air through the branches, helping dry dews and rains promptly and reducing periods of fungus disease infection. All in all, no other single operation will do as much to improve the average pecan orchard as proper thinning of the stands of trees in orchards where they were planted too close together. That, of course, presents a real problem for it is not easy to persuade growers to remove trees that happen to be of excellent varieties.

DIVIDENDS FROM SPRAYING

Reports from our field workers indicate that nut growers are getting excellent results from our spray recommendations. Dr. Paul W. Miller writes from Corvallis, Oreg., for example, that in spraying tests carried on in a 16-year-old grafted Franquette walnut orchard at Scholls, Oreg. a definite increase in crop yield followed the application of three properly timed bordeaux mixture sprays. Thus, 798 pounds of nuts (field or wet weight) were harvested from 10 representative trees sprayed with three applications of bordeaux mixture 2-2-50, whereas but 328 pounds of nuts were secured from 10 untreated trees comparing favorably in size and capacity. In other words, almost two and a half times as many nuts were obtained from the sprayed plot.

J. R. Cole writes from the U. S. Pecan Disease Field Laboratory at Albany, Ga. that sprayed trees produced about ten times as many nuts as the unsprayed trees. He found, too, as Dr. Miller did, that the nuts from the sprayed trees were of decidedly superior quality. Dr. Miller found over three and a half times as many culls in the untreated nuts as in those from the sprayed trees. So the spray program is helping the grower to produce not only more, but better nuts.

STRAWBERRIES

A well known commercial firm once called attention to a new container for its product by saying: "We couldn't improve the product, so we improved the container." George M. Darrow and his associates in the strawberry breeding work appear to have felt the same way about their new creations. The Blakemore, Redheart, Narcissus, Southland, Belmar, Dorsett and Fairfax--to list a few--have met with such an outstanding success that these workers have shifted their attention for the time being to "containers." In other words having brought out strawberries to fit admirably almost any need, they are now showing the way to better quality and improved yields.

Their experiments have already demonstrated that larger-sized and better quality strawberries--and heavier yields--may be produced by thinning and spacing the runner plants and keeping off all additional plants once a good stand has been obtained. Benefits of the spacing have been easily apparent and yields have been multiplied two to three times in some instances.

In a study to see why the spaced row gave the better results, it was found that the number of leaves produced by the plant during the previous fall gave a good indication of what the yield might be the next spring--weather conditions being favorable. Tests with different varieties showed similar results. In a study of the Blakemore in North Carolina, for example, it was found that plants producing only two leaves in the fall produced an average of 9.1 berries the following spring. Plants with 4 leaves produced 12.5 berries; 6 leaves, 20.2; 8 leaves 22.8; 10 leaves, 29.4; and 13 to 22 leaves, 45.6 berries.

A plant that grows in a very thickly matted row produces 2 leaves on an average, which shows the advantage of allowing the plant plenty of room in the row. Further tests were carried out with spaced rows in which a plant that had 42 leaves produced 230 berries while one with but 4 leaves produced only 42! In the tests the spaced rows of plants have been kept the same distance apart as the matted beds, but the plants are spaced 6 to 12 inches apart, allowing a greater amount of soil in the bed from which to draw moisture and plant food. Growers have found it easier to harvest the spaced-row crop as a smaller number of berries are left to become over-ripe.

If the grower is not in a habit of mulching his beds in the fall spacing may prove a disadvantage as severe cold in the early fall or winter may result in severe damage which otherwise would not result if the plants were thickly matted. However, mulching will pay better when the grower has a good field of spaced plants than it would in an ordinary field of matted plants. The cost of spacing, of course, varies with the season and the cost of help, as well as with the variety grown.

POTATOES

The field for research in agriculture is so broad that it is not surprising that many vitally important problems still remain to be investigated. It is somewhat amazing, however, to find that up to the time our Division was organized in its present form, 1929, potato breeding work with the object of securing disease-resistant sorts was practically confined to Maine, Minnesota and New York. Shortly after the Division was organized, Dr. Auchter was able to bring together in Chicago a representative group of workers interested in the problem, and the National Potato Breeding Program was the result. More than half of the States are now cooperating in this important work.

The cost of producing marketable potatoes is greatly increased by the losses due to the many diseases that attack the growing crop and potatoes while in storage. Losses from late blight, mosaic, leafroll, spindle tuber and scab, run into millions of dollars each year. Disease control measures cost potato growers other millions annually. Control measures are relatively ineffective, so that the development of disease-resistant varieties appears to offer the only real solution of the problem. It is encouraging to report that the work to date indicates that such a solution is entirely possible.

The National Potato Breeding Program has been of special importance in bringing into closer cooperation plant breeders and plant pathologists who formerly worked independently. We have seen how important such a cooperation is here in our Division where the studies of Dr. E. S. Schultz in connection with virus diseases have been invaluable in the work on inheritance of resistance to these diseases.

In the course of our investigations we have found a number of varieties and many hybrids that show considerable resistance to scab. Now we have diversified the attack with the expectation of making available in the near future excellent commercial varieties of potatoes combininb resistance to both mild and latent mosaic. Two of our new potatoes, the Chippewa and Katahdin, are resistant to mild mosaic, and produce large crops of excellent shape, with shallow eyes, and possessing desirable cooking quality. Another hybrid, the Houma, named for the Houma potato district of Louisiana, is highly resistant to mild mosaic.

These characteristics of smooth shape and shallow eyes, combined with resistance to mild mosaic in the Chippewa and Katahdin, induced a representative of Argentina, looking for seed potatoes in the United States and Canada, to recommend the purchase of a large quantity of seed stock of the Katahdin variety for that country. He is said to have purchased a quantity of Chippewa, too, although the price of these was comparatively very high. He refused to consider the deeper-eyed types such as Irish Cobbler and Triumph.

A PENNY SAVED---

Friends of agricultural research insist that its cost may be of two kinds: The cost of doing it; and the cost of not doing it. And, they contend, the cost of not doing it is quite often greater. Not to have carried through the campaign that resulted in the creation of our new mildew-resistant cantaloup, for example, would have saved approximately $40,000 in appropriations over a ten-year period. But--growers would now be receiving $5,000,000 a year less for their crop!

Dr. Wm. D. Moore, however, bobs up with evidence that we are not hidebound in such matters. If we can save growers money in other ways, well and good. He pointed the way to a substantial saving by advising against doing certain work. There are some 8,000 acres of land planted annually to early market potatoes in coastal South Carolina. Practically all growers spray or dust with copper fungicides for the control of blight. The annual cost in recent years has been about $60,000. It was considerably more in earlier periods when the potato acreage was larger.

Dr. Moore made a study of available weather and disease records in connection with the sporadic appearance of late blight and the development of a proposed control program. Spraying and dusting practices had been based on the experience with late blight in other sections and not on the actual needs of coastal South Carolina growers, he found. Late blight had developed there but five times since 1917, and in only three instances was the infection of appreciable importance. There is apparently a relation between the development of this disease and the amount and distribution of rainfall during the potato growing season, and so from rainfall data accumulated during any growing period it is possible to predict the time and frequency of application of spray or dust advisable in the control of late blight. Under the circumstances, Dr. Moore advised growers to spray and dust only when weather conditions indicated that it was desirable. It hasn't been desirable for three years now, so the growers have kept in their pockets some $200,000 as a result of following his advice--a sum that would pay for his investigations for a good many years to come!

PREVENTING BACTERIAL CANKER OF THE TOMATO

Even where the old method was better--we have improved on it! In recent years, for example, canneries and seedsmen have been using high speed power machinery for extracting seed from ripe tomatoes. In the old days fermentation was universally employed to separate the last traces of pulp from the seed. In his studies of bacterial canker, a disease that has caused considerable damage in recent years, Dr. H. L. Blood found that fermenting the pulp to extract the seeds killed the disease organisms of bacterial canker.

This discovery led to a study of the toxicity of fermenting pulp to the causal organism and Dr. Blood's tests have shown an unquestionable toxic action of the fermenting fruit pulp upon the bacterial canker pathogen. In several of his tests the pathogen was able to maintain its viability in unfermented juices for from 60 to 100 hours. It lived but from 1/2 to 2-1/2 hours in the 96-hour fermented juices.

Analysis of the fermented juices revealed that acetic and lactic acids were the acids formed most abundantly during the fermentation and a test of the effectiveness of these as seed soaks was undertaken. The results of the preliminary tests indicate that the acetic acid, used alone or in combination, offers promise as a safe and effective tomato seed soak for the control of bacterial canker. Further studies are being conducted by Dr. Blood to establish limits of concentration and effective schedules for the treatment of the seed.

AGRICULTURAL PROGRESS

It is a little difficult to realize that most of the important advances in agriculture have taken place during the relatively short lifetime of the Department. Had it been practicable to patent the discoveries and improvements, and the new plant creations made by the Department during these 75 years, the royalties by now would have made it one of the wealthiest institutions on earth.

In our own field of fruit and vegetable investigations, when William Saunders in 1873 sent two navel orange trees from our greenhouse in Washington, D. C. to Mrs. L. C. Tibbets at Riverside, Calif., he laid the foundation for a citrus industry in the Southwest that has proved to be more profitable than the famed gold mines of California. Yes, the cash value of the Southwestern citrus crop has already surpassed that of all the gold mined in California since the days of '49--and the golden flood from the citrus crop rolls on, in increasing instead of diminishing volume!

Ten or fifteen years ago diseases of sweetpotatoes in the plant bed, field, storage, and market caused losses amounting to 40 percent of the crop, worth $25,000,000 to $30,000,000 a year, between 1918 and 1924. Between 1926 and 1930 the losses had been cut to about $8,000,000, as a result of research on diseases.

A striking example of saving a large agricultural industry is supplied by Jagger's creation of disease-resistant lettuce for California. The industry of the Imperial Valley was threatened with complete destruction. Our new varieties saved it. The Marglobe tomato was created by Pritchard and Porte to save the tomato shipping industry of Florida. It did just that--and went on to become the most important tomato variety in the world!

CHANGING AGRICULTURE

"I recall hearing one of the two best known peach growers in America of a generation ago tell of cultivating his peach orchard 30 times in one season to conserve soil moisture," said Mr. H. P. Gould, discussing before the Virginia State Horticultural Society the trend of fruit culture only a quarter of a century ago. "Now we know that moisture, once in the subsoil, is lost by two processes--one, by gravity through drainage; the other by being pumped out through the leaves of plants growing therein.

"In contrast to excessive tillage, a humus destroying agency, we are now placing the general emphasis on a type of soil management that maintains or increases the humus content of the soil. Success in orcharding, some one has said, depends upon a permanent system of soil management that will maintain soil organic matter. Hence tillage at times to destroy undesirable weeds and other growth that compete with the trees in depleting soil moisture; and the use of green manure and cover crops that supply herbage, which in turn means humus in the soil.

"Or, as an alternative, sod culture, with the vegetation held in control as needed by occasional mowing, but which provides material for mulching--the mulch gradually being converted into the much needed humus. Indeed, one of the most efficient methods of orchard culture is the mulch system that calls for enough herbage to form an abundant mulch under the trees and beyond, whether that herbage is produced in the orchard or is hauled there from outside.

"There have been decided trends in the use of fertilizers--especially in the sod culture orchards. The old teaching used to place emphasis on the need of potash in orchard fertilizers; it was little short of heresay to use nitrogen because of the excessive vegetative growth it would induce. During the past 20 or 25 years we have learned that in the average orchard nitrogen is the one plant food likely to produce an appreciable response, and its wise use has repeatedly given marvelous results to the advantage of the grower.

"The trend in pruning practices has been equally revolutionary. The heavy pruning of fruit trees in their prebearing period has unquestionably dwarfed the growth and delayed the bearing of literally millions of trees. Likewise the heavy pruning of bearing of literally millions of trees. Likewise the heavy pruning of bearing trees has with equal certainty been costly to the grower.

"Twenty years ago little or no thought was being given to the very essential matter of cross-pollination in planting orchards. We now know that suitable cross pollination is of the greatest importance. Of course it always has been important but we didn't realize it. To be sure, this problem has tended to become more acute as the tendency to reduce the number of varieties planted has developed."

FOR WANT OF A NAIL--

What has all this to do with the average employee of the Division? A whole lot, because even with the remarkable advances made possible by horticultural research, a chain is still no stronger than its weakest link. You may not consider your job very important, but carelessness or indifference on your part may sometimes have far-reaching results. "For want of a nail the shoe was lost," says the old proverb; "for want of a shoe the horse was lost; for want of a horse a rider was lost; and for want of a rider--a kingdom was lost." All for the want of a horseshoe nail!

The Secretary was speaking to a group of employees concerning Department activities. "Now," he said, "I suppose many of you here are in quite humble positions in the Department. You get down at 9 o'clock in the morning, and you quit at 4:30 in the afternoon. And you do your work in about the same way day after day. You may not see how this talk has anything to do with you and your work.

"Yet, it has a lot to do with you and your work. There are hundreds--thousands--like you. Sometimes I wonder as I sign the various papers and correspondence that pass over my desk. I ask that this and that be done, and sometimes I try to follow things back. Who is it that really does the work? If I refer a matter to a Bureau chief, I know that he usually does not handle it himself. He refers it to a Division chief. The latter probably doesn't handle it either. Who does? Well, I suspect that in the final analysis the job very often gets back to the thousands like you--and gets done."

Whether it gets done right or not may easily depend, then, upon some employee holding a relatively minor position. How it gets done may not only have far-reaching results for the Department, but may also determine whether the employee is to continue indefinitely in the minor position. We are all working together for agriculture in the interests of the general welfare, "to (1) reduce costs of production, (2) widen markets and reduce wastes in distribution, (3) discover new uses for farm products and byproducts, (4) adjust production to demand, and (5) improve the quality of farm products. The underlying purpose of all of these is to raise family living standards."

To raise family living standards! That is the keynote of our job. We all like to know the why of our job as well as the how. Any work without an objective is drudgery; when its purpose is known and approved, it becomes interesting. We like to feel that our work is really contributing to a worthwhile end. We work to make the farm a better place on which to live, yes; to make possible the highest grade of product and greatest practicable financial return to the grower for his efforts, yes; but in the last analysis our work is directed toward making available to the consumer the best possible horticultural products at the lowest practicable cost!

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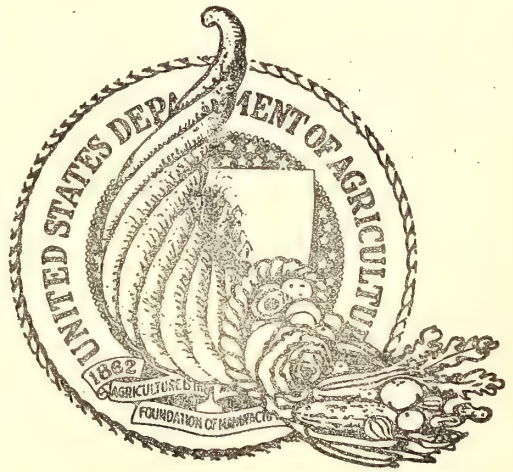
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., January 15, 1938 No. 2

Getting off on the right foot

"What farmers would do without the U. S. Department of Agriculture, the agricultural colleges, experiment stations and extension service would be hard to say," Kirk Fox, editor of Successful Farming writes. "A parallel might be drawn in the case of a coon-hunting friend who shoots a gun having an awful kick. This fellow is so used to the recoil that he braces himself accordingly. The other night he attempted to shoot across a deep hole in the creek. Bracing himself as usual for the kick, he was so out of balance when the gun missed fire that he fell in headfirst!" Mr. Fox adds: "We yet expect more of these services in future because of greater need for them."

To look to us for more help than we have rendered to the fruit and vegetable industry in the past, is handing us considerable of an assignment. However, Dr. Charles Brooks of our section of handling, transportation and storage, and market disease investigations, seems to have started us off on the right foot in this direction in telling members of the American Society for Horticultural Science at the Indianapolis meetings, December 27 to January 1, of the treatment worked out for waxing the stem scar of tomatoes, more than doubling the time they may be held at ordinary temperatures. The tomato skin is almost gas-tight except at this stem scar. Picked green and waxed over the scar with a mixture of 1 part beeswax, 1 part paraffin and 2 parts mineral oil, tomatoes have been held at 70°F. for as long as three weeks, compared with 10 days for untreated fruit. The process appears likely to prove of considerable value for late season supplies, or for early tomatoes that are to be shipped long distances. Where coating the whole fruit is better suited to commercial convenience, it is of interest to bear in mind that it is the wax that is retained at the stem scar that determines the effectiveness of the treatment.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS

J. R. Winston, Orlando, Fla.

Writing on December 29th, he gives us some interesting observations on the effect on fruit of the recent freeze in Florida. Vegetables, of course, were practically all destroyed in its path.

"The frost damage to fruit from the freeze of several weeks ago was probably more severe than the industry thought," he writes. "Frosted fruit doubtlessly can be found almost anywhere north of us where the air drainage is very poor. Damage was even observed along the east edge of the lower Ridge where that country fades off into the flat woods. In general, citrus tree damage is not bad. Most of the groves which were badly hit several years ago came through without defoliation. A few groves around Sorrento and DeLand will lose practically 100 percent of their leaves. However, the badly affected properties are not located on the highway. If one were to drop in uninformed about the freeze, he would never suspect that there had been one. As for citrus fruit damage, there is no way of evaluating the percentage of the crop affected for the reason that immediately after the freeze there was a terrific rush of shipments of frostbitten fruit.....

"Although drying out of the fruit is quite abundant in several districts, it is still only a minor proposition as compared with the freeze of December, 1934. Yesterday at DeLand with Mr. Hakes we found some crops showing 100 percent of the fruit drying out at the stem ends, and associated with no leaf damage. In fact we found drying fruit in every grove visited, the percent ranging from 5 to 100, averaging perhaps around 30 percent. At Sorrento and around Plymouth the same observations were made. From all accounts Crescent City was hit as hard, if not harder, as DeLand. Buckling of the segment walls was evident in quite a good deal of the fruit that showed no drying out or, as the inspectors say, no shredded wheat. This buckling is an easy means of detecting frozen fruit at this early stage. We observed hesperiden crystals in oranges within 48 hours after the freeze. Yesterday we also found plenty of crystals in tangerines. Fruit is beginning to drop badly. This is particularly true of pineapples, "buds," and seedlings. I now question whether there is any correlation between stage of maturity and hesperiden crystal development, also whether there is a consistent varietal correlation. The Plymouth CGA has ordered a Food Machinery fluoroscope for detecting frozen oranges. We have heard of no other house getting this equipment....

"Papayas appear to have been as badly hit as in 1934, and judging from the appearance of the avocado trees around town, excepting those protected by fire or covers, they were badly damaged...."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS

C. O. Bratley, New York, N. Y.

A letter dated January 4, to Mr. Fisher, includes the following observations which may be of interest to News Letter readers:

"Yesterday one of the inspectors brought us a bunch of asparagus from a 165-crate shipment received over the week end from Argentine. About 90 percent of the spears in the shipment were decayed either by Penicillium or bacteria. The Penicillium had worked up through the base of the spears despite the fact that each base had been dipped to a depth of about 3/4 inch in melted paraffin. I would guess that the asparagus had been cut too long ago to insure it of good arrival condition. Finely ground spaghnum was used in both top and bottom of the crate.... Hawaiian asparagus continues to arrive weekly in small lots. The price yesterday for select grade was $17.00 a crate. But just before Christmas extra select brought $36.00 a crate or $3.00 for a 2-pound bunch. Since the arrival in November of poor quality stock the price has been uniformly high and the condition has been very good."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The weather at Fort Valley during early December would have done credit to a locality much further north," he comments. "The maximum temperature for the week ending December 11th, for example, was 47°F., lower than the normal mean temperature of 48°. December 7th a minimum temperature of 13° was recorded. Since the temperature was above 45° for only six hours, a healthy addition of 162 hours of cold was recorded, making the total to that date 550 hours.

"Many peach growers feel there is no occasion to worry about dormancy of peach trees this year. One grower who had his car freeze up, his water pipes in the house burst, and his hot-water stove blow up, throwing the stovelid through the ceiling, remarked that he didn't care a bit--it meant a crop of peaches next year! However, with the cold requirements of the trees being rapidly satisfied, a warm spell during the winter followed by a cold snap would prove disastrous to crop prospects."

Elmer Snyder, Fresno, Calif.

"The planting of grape seeds in flats and in cold frames was completed during the week of December 13-18," he reports. "Seven thousand five hundred five seeds obtained from controlled crosses and from selfed varieties were planted in flats, moistened, and stored in a cool location in preparation for transferring to the greenhouse after a period of stratification. Seeds obtained from rootstock varieties were planted in cold frames for further studies on root knot nematode susceptibility. Twelve thousands five hundred twenty five stock seeds were planted."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

The contention of a mother that the reason she insisted that her children eat plenty of spinach was not because of the iron it contained but because she wanted to make sure that the children would have plenty of grit, seems to be supported by the testimony of the Scotsman who, asked if he liked spinach, replied that it was his middle name--Thomas Sandy MacPherson. Be that as it may, the News Letter's editor was surprised to learn from Leaflet No. 128, "Production of Spinach," by J. H. Beattie of our Division, that spinach is the most important crop grown for greens in the United States. And now John C. Dunegan comes along to point out that Ozark canners alone packed 1500 cars of spinach the past year, worth around two million dollars.

"Ozark canners put up a $7,000,000 pack this year," he reports, "the largest since 1925, according to an announcement of George Appleby of Fayetteville, president of the Ozark Canners Association. Tomatoes represented about half the pack. A total of 2,577 cars of tomatoes was packed, for which the farmers were paid nearly $1,000,000. The next largest crop was spinach, which was far and away the largest in the history of the section. Some 1500 cars of spinach were packed, representing a value of $2,000,000. Another $1,500,000 went for beans, apples and blackberries.

H. F. Bergman, Amherst, Mass.

Writing from the Cranberry Disease Field Laboratory early in December he said: "The final examination of storage lots of cranberries from our experimental spray plots was completed this week. Although the May and June temperatures for this year indicated that the keeping quality of the berries would be much poorer than last year, such has not proved to be the case. In general the amount of spoilage has been considerably less than last year. Incubator tests in September and October indicated that the keeping quality would be about the same as last year and in cold storage experiments carried on here Early Blacks did not keep as well as last year but Howes were better than last year. The difference in the amount of rainfall as between this year and last is responsible for the better keeping quality this year. Although last year was dry there were occasional showers. This year was unusually dry. There was less than 0.2 inch of rain from the middle of June until August 20. This apparently was too dry to permit much infection.

"Although on the first examination of berries from spray plots just after they had been picked failed to show a very marked difference in the amount of rot in berries from sprayed plots as compared with those from check plots, except in a few instances, the difference became more evident later in the season. Bordeaux sprays in general reduced the amount of rot to one-half to one-third that in the check plot.

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman (continued)

Writing December 30th he said: "Identifications of cultures from rotten berries show that on one bog from the time that the berries were picked up to the middle of October Sporonema was by far the most important of the organisms causing rot. On two other bogs Glomerella caused most of the spoilage with Sporonema a fairly close second. Additional cultures have been made during the week."

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on December 31 he says:

"More than half of our time has been spent in the blueberry fields, taking notes, making collections and starting some small experiments on the effects of pruning on disease control. We have also to make some collections of propagating wood from plants dusted for mildew control last season, to detect if possible whether this disease, and its control, have any effect on the difficulty of rooting Pioneer cuttings."

He had written December 15th: "Blueberry pruning is well under way. The wood growth varies from moderate to very good, and should be able to produce a satisfactory crop next season. With good growth and successive prunings the bushes have largely recovered from the severe winter injury of two and three years ago, and in general they are in very satisfactory condition. They have also been helped by correction of certain fertilizer practices during the last two seasons.

"Both cranberry and blueberry growers held meetings for discussion of the question of damage by deer, preparatory to the opening of the gunning season on December 17th."

NUT INVESTIGATIONS

A.H. Finch, Tucson, Ariz.

"This year's pecan crop was characterized especially by more uniformly good quality than any preceding one," he writes.

"Records for the total crop at Yuma have not been completed, but preliminary estimates place it at 250 tons, which would be considerably more than any previous crop. The nuts have been placed on the market in more uniformly good condition than previously. This is due to the improved quality of the nuts, earlier and improved harvest methods, and a State law providing for minimum standards. Growers are evidencing considerable interest in bleaching and polishing. Small lots of nuts variously processed are being placed on the market to test consumer preference."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"December was largely spent in working up data, making drawings and continuing the etiological phases of the perennial canker work. The more cultural work that is carried on with the perennial canker and anthracnose organisms makes one more positive that the two are strains of the same parent species. I have yet to find a medium upon which the two can even be slightly separated, or at least in which the characters might remain sufficiently constant to be duplicated. Some very striking differences, especially in color, have been produced from the various strains, but these do not consistently parallel in specific characters.

"The only report of interest in connection with boron deficiency studies is the attitude taken by growers in respect to boron applications. We have not been broadcasting information about boron for the simple reason that it sounds too much like one of the cure-alls. One case has occurred here where a grower stated he was going to apply boron over his whole orchard for winter injury protection! This problem of boron deficiency appears as though considerable trouble might result unless growers become thoroughly educated in its harmful effects as well as the beneficial.

"Approximately three inches of snow fell the second week in December, ushering in our winter weather. However, it melted quickly. During November 7.47 inches of rain fell, and for the season we had an excess of 3.12 inches. Conditions during the fall were favorable to tree dormancy."

George F. Waldo, Corvallis, Oreg.

"The exhibit was of particular significance due to the fact that there was a considerable display of frozen pack fruits and vegetables," he writes concerning his attendance at the meeting of the Frozen Packers Association at Seattle on December 10th. "These exhibits were put on by various commercial packers and by the experiment stations at Puyallup and Prosser, Wash., and Corvallis, Oreg.

"The Corvallis strawberry was outstanding among the strawberries. Several other selections were also good. Of the blackberries shown, the Boysen (dewberry) attracted considerable attention; also Ashton Cross, a recently introduced English blackberry which has been grown at the experiment station at Corvallis. This blackberry is about 10 days earlier than the Oregon Evergreen, and had very fine flavor and was less seedy than the Evergreen.

"Although fruits played a large part in the exhibit, yet the vegetables, particularly peas, attracted the most attention. The three experiment stations mentioned have all been active in variety testing and many of the new varieties show considerable promise."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Special attention has been given to the study of the hybrid almonds obtained from the trees in production this year," he writes, "and to the separation of the bitter nuts in the breeding tracts at Davis. Thus far the old ratio of one bitter tree to three of the sweet seems to hold fairly well.

"I discussed with a few of the leading firms the possibility of using our 8-31 and 8-32 hybrid almonds for blanching and salting purposes. Some of the firms are blanching these by hand, and thus far they are very favorable towards 8-32 for blanching and salting. One firm which has had long experience in this sort of work reports that the 8-32 hybrid is especially suited for this purpose and is much ahead of any of the California commercial varieties in this respect."

Hybrid 8-32 is of fine appearance and seems to be a splendid nut to harvest and hull. Although it is in the Ne Plus Ultra class, it is far superior to that variety. It has been shown to a number of firms purchasing large quantities of almonds and in every instance the men familiar with almonds and almond markets have been very enthusiastic about it. It is Mr. Wood's plan now to sum up the data collected in the various districts in California. Probably it will be advisable to release 8-32 for commercial planting.

"A careful study was made of various conditions in almond orchards with special reference to almond troubles which have been developing, or at least becoming more extensive during the last few years"; he writes further. It appears that some of these troubles are due to lack of nutrition, some to lack of sufficient soil moisture, and others to improper orchard practices. Most of these conditions can be corrected. However, in some instances the trouble may be due to virus diseases and may prove difficult to correct.... In general, I find almond orchards much better taken care of than last year.

"Some attention was given to walnut troubles which also seem to be on the increase. It appears that in many orchards there was quite a percentage of very inferior nuts. The production in most instances, however, was heavy even after allowance was made for the inferior nuts. In some districts the mites damaged the orchards more than has ever been the case. While mite damage has often been serious in some particular orchards, it has never been so general over wide areas as has been the case this year".

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory shortly before Christmas he said: "I believe that this is the first season since I have been preparing weekly reports that I have been able to report a yield of over 100 pounds from an individual tree of the Schley variety.

"The comparison of the average yield per tree and the sizing records indicate that the best control was not obtained on the plot that gave the best average yield, which was the 3-1-50 bordeaux, but rather it was on the 3-1-50 bordeaux plus 1-100 summer oil emulsion. However, there was such little difference in the size and quality of the nuts on these two plots that we still believe that the 3-1-50 bordeaux mixture is the most practical spray application for commercial pecan growers.

"The nuts from the plots sprayed with bordeaux mixture plus wettable sulphur were not as good as those from the straight bordeaux plots. However, we believe that this was due to the fact that we added too much of this wettable sulphur, 3 pounds to 50 gallons of water, to obtain the best results. This wettable sulphur did repel the black aphis and in our opinion there should be some extensive experimental work conducted with it during the 1938 season."

F. N. Dodge, Robson, La.

"The plots receiving different methods of orchard management show large differences in both yields and in the increase in size of tree trunks," he writes from the Pecan Field Station. "The differences in yields between paired trees of the cultivated and the sod plots amount to 30 to 60 percent of the average of their means. Similarly differences in the increase in cross-sectional area of the tree trunk of from 25 to 35 percent are evident. Those treatments that caused the greatest decrease in yield have also caused the greatest decrease in the amount of growth made by the tree trunk. The data have not yet been analyzed statistically, but the amount of variation within each of the treatments is exceptionally small..... I measured the length of enough Schley pecans from both sod and cultivated plots to determine that there is a difference in the length of nuts of the same diameter from trees grown under different cultural treatments. Nuts of a given diameter from the Bermuda plots are shorter than the same diameter nuts from trees receiving summer cultivation. The difference in length of nut are greatest with the smallest diameter nuts, and least with the largest diameter nuts. Many of the largest diameter nuts showed no difference in length between the two treatments. Associated with this decrease in length there is also a tapering of the base of the nut. The nuts from the sod plots had a tapering base while those from the cultivated plots had a blocky, rounded base."

AMERICAN GRAPE VARIETIES

Approximately 230 varieties of American grapes have been under test at the Arlington Experiment Farm, Arlington, Va. for periods ranging from 5 to 20 years. In Circular No. 437, "American Grape Varieties", I. W. Dix and J. R. Magness, evaluating American grape varieties largely on the basis of studies with this collection, rate but 89 as having apparent value for some purpose in some section of the United States. Some of the others may have local adaptation or be of value in certain sections, but because of inherent weaknesses it seems unwise to recommend them. Here is a guide that should save thousands of dollars to American grape growers!

The circular is concerned with "bunch" or euvitis grapes, which constitute practically the only sorts grown east of the Rocky Mountains, except in the southeastern part of the United States. The muscadine varieties, grown in the Coastal Plain region from southern Virginia to Texas, constitute a distinct type and are discussed in a separate publication--Farmers' Bulletin 1785, "Muscadine Grapes", by Charles Dearing, now in press.

The grape industry in California, of course, is based almost entirely on Vitis vinifera varieties introduced from the Old World. These also represent a portion of the industry in other States west of the Rocky Mountains. The varieties described in the present circular, then, constitute those available for production throughout the remainder of the country.

Since grape growing in the Old World dates back beyond the records of history, it was quite natural that our early settlers, seeing the abundance of wild grapes growing here, visioned the eastern part of North America as a grape-grower's paradise. They hastened to bring in the better sorts from Europe, but were destined for long years of disappointment in their attempts to establish Old World varieties. The European grape is adapted primarily to regions having dry summers and mild winters. Many diseases had become established on the wild grapes of America, growing in regions of warm, humid summers, but they had developed at least partial resistance to these diseases. The imported vines, on the other hand, fell easy victims. Too, they were also subject to low-temperature injury.

Thomas Jefferson had the right idea. He wrote in 1809: "I think it will be well to push the culture of that grape (the Alexander, the earliest widely distributed American variety") without losing time and efforts in search of foreign vines, which it will take centuries to adapt to our soil and climate."

The circular's ratings are largely on a comparative basis for the particular characters indicated, five asterisks (*****) representing the maximum, three the average, and one the minimum rating. Since four stars (****) represent the maximum rating of movie shows and actors, our authors apparently figure that a good grape variety deserves five!

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"The most severe December snow storm in 12 years fell in Cheyenne and at the station on December 14. At 3:30 p.m. on the 14th the snow measured 9-1/16 inches at the station and it continued to fall for about an hour afterwards. Travel on public roads and the roads within the station grounds was extremely hazardous, although the roads did not become impassible. The snow was a wet one and the moisture was welcome. It was cleaned out of the roads, but the wind and continued low temperatures combined to make driving difficult again.

"The annual rabbit drive to round up animals for use in connection with experiments being conducted with various rabbit repellents was conducted on December 8, when the entire enrollment of CCC Camp NA-2-W, which is located on the station grounds, turned out to herd the animals into the rabbit pen. All attempts to count the rabbits as they entered the pen failed, as did similar efforts after the drive was over, but estimates of various staff members placed the number at well over 100. In previous years the drives have usually netted between 3° and 5° rabbits.

"This year the CCC enrollees were distributed so as to encircle that portion of the station southeast of the building area at intervals of approximately 50 feet. The rabbit pen is located about in the center of this area, so the enrollees advanced toward the pen driving all the rabbits which they had thus surrounded ahead of them. Trees had already been planted in the pen for use in the experiment and had been painted with 25 different repellent mixtures which are being studied. Notes will be taken from time to time as to the degree to which trees painted with the various mixtures have been attacked by the rabbits, and in this way it will be learned which of the mixtures are the most effective for use as repellents.

"A box of strawberry herbarium specimens from our collection of Rocky Mountain species was shipped to Dr. L. H. Bailey, of the Bailey Hortorium, Ithaca, N. Y., for identification."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (Vegetable crop investigations).

"Reports and observations seem to indicate that the keeping quality of stored sweetpotatoes in this section this year is generally satisfactory. This condition is doubtless explained in part by the fact that there was a period of very favorable weather for sweetpotato harvest during the latter half of October. Also, because of campaigning by inspectors of the Mississippi State Plant Board and the resulting cooperative work with growers, seed stocks are remarkably free from rots. Consequently, there is promising evidence that the sweetpotato will be more extensively grown as a ready money crop in Mississippi."

ADMINISTRATIVE NOTES

Injuries to Employees. The tourist had lost his way. Wandering aimlessly on a lonely road in Scotland, he at last met up with another man, a kilted Highlander. "Gosh, friend," confessed the traveler, "I'm lost." The Scot looked at him calmly. "Is there perhaps a reward oot for ye?" he inquired. "Why, no," said the tourist, somewhat taken aback. "Weel, in that case," remarked the Scotsman, walking on, "ye're still lost."

The Employees Compensation Commission appears to think we are still "lost" in the tangles of the amendment (mentioned in the News Letter of November 15) prohibiting the disclosure of information pertaining to claims arising from injuries in which the United States has an interest. So-o-o-o, in further explanation of the amendment the Commission has informally advised the Department that this prohibition is applicable when an employee becomes subject to the provisions of the Employees' Compensation Act as a result of an injury in line of duty and it is found, after investigation, that a person or persons not connected with the Federal Government is responsible for the accident--that is, a third person. As a result of the findings of the Commission, then, it may be necessary for the Government to take legal action with a view to recovering damages from the so-called third person, and in such cases it is essential that no records, statements of witnesses, or other papers pertaining to the case be made available to any one other than the duly authorized representatives of the U. S. Employees' Compensation Commission.

The Commission states, however, that it is not its intention to prohibit employees of the Federal Government who are covered by liability insurance from reporting accidents, in which they are involved, to their insurance company or to law enforcement authorities. In fact it is mandatory that they do so immediately. The Commission further states that if after a thorough investigation by their representatives, information other than that reported by the employee is disclosed, copy of such information will be made available to interested parties, such as the law enforcement agency or the insurance company.

Pay Rolls The Business Office requests that pay roll vouchers be submitted promptly at the end of each month, covering services performed during that month. In no case should pay rolls be delayed more than 10 days after the end of the month in which the service was performed. Each month the Bureau Accounting Office is required to make a report to the Civil Service Commission regarding employment outside of Washington, D.C. In order to complete this report in time it is necessary that it receive all pay rolls promptly.

ADMINISTRATIVE NOTES

Financial Questions — It appears desirable to remind our workers that all matters pertaining to finance should be taken up through our Business Office or through our section leaders, never directly with Bureau or Department officials. This applies to requests for retirement money upon resignation, inquiries concerning salary, advance of funds, etc. As a matter of fact, the safest procedure to follow is to always take up all financial or fiscal matters with our Business Office.

GASOLINE AND LUBRICATING OIL

We are just in receipt of a memorandum dated January 3 from the Division of Purchase, Sales, and Traffic, advising that the Interior Department has entered into a contract with the Standard Oil Company of Ohio for service station deliveries of gasoline and lubricating oil, to cover the period from January 1 to March 31, 1938.

However, acceptable bids were not received covering the states listed below and the District of Columbia, covering the period from January 1 to June 30, 1938.

Alabama
Connecticut
Delaware
Florida
Georgia
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Mississippi
New Hampshire
New Jersey
New York
North Carolina
North Dakota
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Vermont
Virginia
West Virginia
Wisconsin
District of Columbia

It will, therefore, be necessary to make purchases of gasoline and lubricating oil in the states listed above as we have in the past, until such time as a suitable contract is entered into.

--AND TEN YEARS LATER

Dr. Auchter is made Chief of Bureau

With the beginning of the new year, the Secretary announced that Dr. Auchter had been selected as Chief of the Bureau of Plant Industry, succeeding Mr. Frederick D. Richey, who resigned to engage in professional corn breeding. It is easy enough to say that our loss is the Bureau's gain, which is merely stating a truth; but it isn't so easy to say good-bye to a Chief who has shown us so much of friendly understanding and consideration.

During the ten years that editing this News Letter has been part of my job, I have been continually impressed by Dr. Auchter's readiness to give credit for good intentions. Oh, I know that a certain locality, not yet covered by the Division's investigations I hope, is supposed to be paved with good intentions. That's the thing that indicates that a man must be of high caliber to waive the general conviction and say, in effect "Don't shoot the pianist--he's doing the best he can." I don't need to tell you that the News Letter has had its share of blunders, typographical and others; but I do want to tell you that during these ten years there has never been a word of censure from the Chief. He knew that I was as much distressed as he over the blunders; and he let it go at that.

Ten-year intervals have stood out strikingly in Dr. Auchter's career. He was born and brought up on a farm in western New York where diversified farming is imperative if a family is to eat at all regularly. With this wide background of farming experience, he entered Cornell, graduating in 1912. Ten years later he received his doctor's degree from that University. In the meantime he had worked with the West Virginia Experiment Station for a few years and gone on to become head of the department of horticulture at the University of Maryland where he remained for the ten years from 1918 to 1928. In 1928 he came to the Bureau, facing the difficult task of reorganizing its horticultural activities. He brought with him an outstanding reputation as an administrator and research man, and lived up to that reputation 100 percent by the manner in which he succeeded in forming a collection of intensely individualistic scientific units into the mosaic we know as the Division of Fruit and Vegetable Crops and Diseases. This piece of work stands out as an amazing illustration of the effective combination of individual initiative with teamwork.

And ten years later we find him entering upon the wide field that opens before the chief of such a bureau as Plant Industry. Dr. Auchter has a real job in so directing the Bureau that it will continue to hold the high place in the esteem of other Bureaus, the State Agricultural Experiment Stations, and the public that it has enjoyed under the able leadership of Mr. Richey, but we know that he will do it!

Vol. 10 No. 2 January 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., February 1, 1938 No. 3

What--no more Strawberries! Riding down in the streetcar, a friend remarked jokingly to the specialist in small fruit breeding: "I see that the paper this morning has a list of persons who won't eat strawberries any more." "Ridiculous!" exclaimed the specialist. "Let me see it." The other man folded back the paper and pointed to the obituary column!

However, the "live" ones appear to be eating strawberries whenever they can get them, to judge by agricultural statistics, which show the commercial crop for 1936 as something more than ten million 24-quart crates. While this total is a trifle short of the commercial crop of former years it means, taken with the strawberries grown for home consumption, that the fruit is immensely popular; and indicates that our efforts to improve both quality and quantity production are very much worth while.

The word "efforts" is used advisedly. In connection with our strawberry breeding work we have fruited out 237,000 strawberry seedlings! Perhaps 2 percent of these have been considered worthy of further trial. But 7 have so far been considered worthy of naming and introduction into commercial culture--and these have proved valuable additions to the list of varieties. The Blakemore, in fact, is now considered to be the best preserving strawberry in the United States; the Redheart is grown more extensively than any other canning variety; and the Dorsett and Fairfax come close to being the last word in dessert quality. And we have some 30,000 wild Rocky Mountain strawberries growing at Cheyenne, Wyo., hoping later to incorporate their resistance to cold, dry winters into some of the best cultivated varieties.

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Weather condition: Only light frosts have occurred so far this winter," he writes January 10th. "Some bud swelling seems to be taking place, especially in cherries. A hard freeze at this time no doubt would cause injury to some fruit buds. Some growers are pruning pear trees and a few have started apple pruning. Local recommendations have discouraged this winter pruning practice.

"General notes: The Apple Growers washing and fruit packing warehouse burned recently, with a $225,000 loss. This was fully covered by insurance, however. Definite plans have not been announced but the belief is prevalent that rebuilding will be in the form of several smaller units distributed throughout the valley, since the burned unit was probably too large for efficient operation.

"The town of Hood River is gradually changing its scenery. Clearing of the Columbia River bottom lands is well under way, and a preliminary raising of the river water level has been taking place with the closing of several of the Bonneville Dam gates. The first boats to go through the new dam locks passed Hood River January 8. As soon as the local boat dock is completed we will have direct connections with regular ocean travel. Since water travel is cheaper than most other forms, fruit shipments may eventually become a common thing here."

John H. Weinberger, Fort Valley, Ga.

"Some very interesting results have been obtained in the use of chemicals to break dormancy," he writes from the U. S. Horticultural Field Station on December 27th. "Early Hiley twigs, collected December 7, after approximately 400 hours of cold, and kept in the greenhouse, have not started to row. However, when treated with oil only, the fruit buds are showing gray, with no leaf growth; but those twigs treated with an oil solution of dinitrophenol have leaf growths 1/2 inch long, and the fruit buds are much swollen and green. The uniformity with which the buds are starting is remarkable. Four other chemicals used are also effective in breaking dormancy, but not nearly so much so as dinitrophenol.

"In a later series dinitro-ortho-cyclohexylphenol is about as effective as dinitrophenol but growth is not far enough advanced for best comparison. With twenty of the chemicals now eliminated, it will be possible to concentrate on the leads already obtained.

"The peach pits from crosses made at Beltsville, Md. last spring were received on Monday and immediately planted in sand in flats. More than 1,400 healthy embryos were obtained, mostly Hiley crosses and selfs. A few have already sprouted."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The nursery stock problem mentioned in a recent report was investigated and I found, upon visiting the Benton County Nursery, that the trees showing the symptoms of water loss were all grown in the vicinity of Rogers and Bentonville," he reports January 8th.

"The trees were immature when dug and the leaves had to be removed by hand as the trees were brought to the shed for storage. The case investigated in January, 1937, was concerned with trees grown at Silver Springs, Ark., in which the grower attempted to overcome the effects of the 1936 drought by pumping river water into his nursery rows.

"Although the present case deals with trees produced in the Rovers-Bentonville area, an examination of the weather data shows that the rainfall in the Bentonville area during the month of September 1937 was the highest (15.18 inches) recorded during the 32 years the Bentonville station has been in existence. This excessive rainfall probably induced a late fall growth of the nursery stock with the result that they were not mature when dug. The development of the spots at the nodes indicates the removal of the leaves allowed rapid loss of water from the immediate vicinity of the leaf trace. The variety Sweet Bough appears to be more seriously affected than any of the others, although some injury was also noted in the Delicious group as well as Ben Davis and Winesap."

E. S. Degman, Medford, Oreg.

Writing from the Pear Field Station on December 29th he reports that several pear blocks have been investigated and considered as possibilities for the starting of new experiments. "One cannot help but wonder how the trees got beyond the 'stump' stage after seeing some of the pruning," he comments. "However, Dr. Aldrich's experiments have shown heavy pruning to cause more leaf surface (late in the season), more shoot growth (length) and greater increase in circumference of lateral limbs and trunk, as compared to light pruning."

George F. Waldo, Corvallis, Oreg.

"Studies on the effect of colchicine on strawberries and raspberries were started during the week," he writes December 31. "Very heavy rainfall occurred, though it was confined to the lower parts of the Willamette valley, consequently no serious flood occurred. The total rainfall for the year 1937 amounted to 56.37 inches, which is the heaviest in many years. During November 9.71 inches fell, and during December 11.17."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"A review of the data collected this week shows that thinning the crop on the Mahan variety has increased the specific gravity of its nuts," he writes from the U. S. Pecan Field Station on January 3d.

"Also, the crop on the Mobile trees on Mexican seedling rootstock had a lower specific gravity than did those harvested from trees of that variety growing on Hicoria aquatica rootstock. At harvest it was noted that the shucks on the trees on Hicoria aquatica rootstock opened more than a week earlier than those on the trees on Mexican seedling rootstocks. Many of the shucks on the trees on Mexican seedling rootstock did not open normally by the time they were harvested November 22."

Max B. Hardy, Albany, Ga.

"The cold weather which we experienced in November and December did no permanent injury to the vetch cover crop and it is a pleasure to be able to report it to be in the best condition at this time that we have seen for some years," he writes from the U. S. Pecan Field Station and Laboratory on January 8th. "Observations have been made on cover crops of peas, vetch, and oats planted as late as two weeks before Christmas and even these late planted cover crops are in excellent condition.

"The work of digging the trees discarded from the hybrid orchard has been completed, and the land to be planted to seedling chestnuts has been completely cleared and disked and is now ready for planting. Some headway has also been made in repairing the fences. The routine work of pruning and taking trunk circumferences at Philema has progressed satisfactorily and should be completed sometime during the following week if the weather permits."

C. E. Schuster, Corvallis, Oreg.

Writing on January 8th, he says that up to December 31 the rainfall for the months of the rainy season had already reached 26 inches or more, out of a normal of about 40 inches.

"In spite of the heavy rainfalls comparatively little erosion has taken place, as the cover crops have been held in good shape. A higher proportion of the orchard men are putting in cover crops than usual, partly due to the Soil Conservation Service movement which pays them for doing it.

"The filbert pollination season is moving on rapidly, with pollen being shed by the early varieties and pistils are becoming well developed."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Apple growers remain in a very depressed mental state and various representatives of the granges, chambers of commerce and other factions have a committee working under the direction of R. H. Sargent to set up a new organization for marketing," he reports January 15th.

"Present information indicates that this will be another type of clearing house and that its essential object is to satisfy credit agencies that everything possible is being done to have the fruit marketed in an organized manner in order that the growers may secure finances for 1938 production. The only thing certain about this at present is that many growers cannot be financed and I have a report that many grower bankruptcies are already being instituted. It is quite probable that these bankruptices not only affect a readjustment of indebtedness against the land, but will also set up a new standard of orchard values.

"A very mild winter has prevailed thus far. Temperatures continue to remain between about 25° or 26° F. and 36°, with some bright periods during the days. Weather conditions are ideal for pruning operations and many growers are taking advantage of the opportunity."

ADMINISTRATIVE NOTES

Shipments to London, Eng. The Secretary of State has requested that all shipments for the various Government offices in London, England, which are forwarded through the United States Despatch Agent in New York City be addressed as follows:

The American Embassy,
LONDON, ENGLAND

with an identification mark:--

C. G. (Consulate General) C. A. (Commercial Attache)
D. A. (Despatch Agent) A. A. (Agricultural Attache)
T. A. (Treasury Attache)

In the request from the State Department, particular attention is directed to the necessity for eliminating the names of officials or officers, and substituting the indicated initials for identification purposes.

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"A study is being conducted by Mr. Babb and Mr. Kraus regarding the influence of temperature on the filling peas," says the report for January 8th. "Special cages with thermostatically-controlled temperatures have been constructed and temperatures of the Wyoming basin country are being simulated. Greenhouse tomatoes and earlier strains of curcubits have started to bloom and are being self-pollinated.

"A second rabbit drive was held December 30th with the result that the rabbit pen, where experiments are being conducted as to the effectiveness of various repellent solutions, became overcrowded so Andy Krofchek and Charlie Adams killed out about 100 of the animals on January 2. A week previously Mr. Adams and some friends had killed approximately the same number of rabbits on the station grounds.
.....

A. C. Hildreth,
Superintendent."

ADMINISTRATIVE NOTE

Last year Congress passed a bill authorizing the setting up in the Treasury Department of a fund to cover Government losses in shipment. The Regulations promulgated in connection with this fund are more or less restrictive on the materials which can be included in the coverage of this protection. At the present time questions have been submitted by the Solicitor's office to determine whether valuable scientific equipment is to be considered as coming in the scope of the protection offered, and also the General Accounting Office is returning all transportation vouchers on which extra payment has been made for valuation charges, as it is considered that such charges are not permissible under the appropriation acts.

In making shipments by freight or express a valuation up to $50.00 is allowable by the company without additional charge, and wherever possible such stated valuation as called for in making such shipments should be limited to this amount. If values exceeding $50.00 are placed on any shipment there is a possibility that the employee making such a shipment may be called upon to pay out of personal funds the additional valuation charge. The Comptroller General has considered that such valuation charges are nothing more than insurance, and under the laws the Government cannot pay insurance. As soon as additional information is available the matter will be called to your attention in the News Letter.

ADMINISTRATIVE NOTES

Gasoline, oil, anti-freeze. We are just in receipt of a notice that the Procurement Division of the Treasury Department has entered into a contract with the Socony Vacuum Oil Company covering service station deliveries of gasoline, oil, etc. in the northeastern States.

The schedule of prices is given below, and any operators of official vehicles wishing to take advantage of the contract may do so, as the Bureau has requested that employees of the entire Bureau of Plant Industry located in this area be included. This contract will expire March 31, and there is a possibility that by that time arrangements will have been made for service by one or more of the oil companies operating chains of stations throughout the eastern and western States.

SCHEDULE OF PRICES

STATE	GASOLINE		LUBRICATING OIL		
	Mobilgas (*Gallon)	Socony Ethyl (*Gallon)	Moboil (Quart)	Socony Lubrite (Quart)	Mobil Freezone (Quart)
Maine	17.8¢	19.8¢	29¢	19¢	25¢
Massachusetts	15.3	17.3	29	19	25
Connecticut	15.3	17.3	29	19	25
New Hampshire	16.8	18.8	29	19	25
Rhode Island	14.3	16.3	29	19	25
Vermont	16.8	18.8	29	19	25
Pennsylvania	15.0	17.0	29	19	25
New York	16.7	18.7	29	19	25
New Jersey	14.0	16.0	29	19	25

*These are maximum prices, and the price for gasoline at time of sale will be the retail posted price at time and place of delivery as posted by dealer in contractor's products making the sale and delivery. Prices indicated above on lubricating oils and anti-freeze alcohol are definite fixed prices for the duration of the contract. Prices on various lubrication jobs are omitted because of voluminous description of the several services, but may be obtained upon application to this office.

ADMINISTRATIVE NOTES

Double Employment — There seems to be an impression in some quarters that an employee may be paid the salary of two separate and distinct positions where the combined salary does not exceed $2,000. This is an error, for the Comptroller General has ruled that "An employee may not be paid the salary of two separate and distinct positions in the same Department or establishment, even though the combined salaries thereof do not exceed the rate of $2,000." The argument is that such employment is contrary to public policy, even if there is no actual legislative inhibition against it.

Purchases of Foreign materials. — Bureau of Plant Industry Memorandum No. 970, issued by the Chief of Bureau on December 10th, calls attention to requirements covering the purchase by the Government of articles of foreign manufacture. When items of foreign origin are to be procured and are not mined, produced, or manufactured in the United States, the Chief of Bureau is authorized to purchase them on the basis of a certification as follows:

> "Corresponding articles, materials and supplies are not mined, produced or manufactured in the United States in reasonably available commercial quantities and of satisfactory quality."

When such a purchase is made, however, a statement of the facts upon which the certificate is based must be incorporated in or accompany each certificate issued.

"Vouchers containing such certificates frequently come through covering articles purchased abroad, but without a statement of facts justifying the foreign purchase," says a recent circular from the Bureau of Budget and Finance. "all details need not be incorporated in the certificate, but supporting information should be supplied justifying the certification that the materials cannot be secured of American manufacture. The supporting statements should also show clearly why comparable materials of American origin cannot be used.

"It is the intent of Congress that American produced materials be used by the Government wherever practicable, and that foreign purchases be made only when articles of American production cannot be used, are not available, or can be obtained only at an excessive cost. Where suitable articles of American manufacture are available, they must be used unless the cost of American articles is more than 100 percent greater than the foreign articles where the purchase does not exceed $100.00. Where the purchase exceed $100.00, American articles must be purchased unless the cost is 25 percent greater."

ADMINISTRATIVE NOTES

Income Tax Memorandum No. 87 from the Office of Budget and Finance calls attention of all employees who are required to render an income tax return, to a decision of the Treasury, dated January 8, 1938, as to certain information that it is necessary to include in the report.

It has been the custom of the Bureau Accounting Office for the past few years to furnish a slip to each employee required to make return, showing the amount of salary paid him, together with other payments or allowances for per diem and mileage. Similar slips will be forwarded within the next few days to all married employees receiving more than $2,500 per annum and to unmarried workers receiving more than $1,000, and these slips will show separately the amounts for salary and other items. In reporting gross receipts it will be necessary to charge against such other allowances the cost of per diem or mileage. This is the last year in which notification will be sent for any other payments than salary. Beginning January 1, 1938, each employee must keep his own record of receipts on expense accounts, etc. so that he may make proper return. The Bureau Accounting Office will not furnish this information for the calendar year 1938. In explaining this, Memo. 87 says:

> "We have been informally advised by the Bureau of Internal Revenue that this does not relieve employees from including such items in their income tax returns as a part of gross income, and employees should be informed to that effect. While the desired information should not be denied individual employees who inquire regarding the amount paid them on reimbursement accounts during the past calendar year, they should be told that in future they must maintain the necessary record of such payments as a personal record, as the Department cannot undertake to keep a special record of such payments by calendar years solely for the convenience of individual employees."

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Weather Note As we write this it appears that that we may have an early spring--meaning that we will soon be getting requests from you for the appointment of various types of assistants. Requests for appointments should be sent in promptly. Where at all possible, they should reach us at least two weeks before the effective date of the appointment. Keep in mind that the employee's full first name (John J. Jones; not merely J. J. Jones) must be given on the request for appointment and on all payrolls. Of course if he habitually uses the initial of his first name and full second name (J. Joseph Jones) that will be all right--but either a full first or full second name must be given. We must know, too, whether the prospective employee has any immediate relatives in the Federal Service. If so, give full particulars. And we need his correct date of birth.

ADMINISTRATIVE NOTES

Praise Perhaps you recall the story of the farmer's wife who one day served nothing but hay for dinner when the men came in from work. At their expressions of surprise and disappointment she explained: "I've been getting dinner for you every day for more than 20 years. So far as any word of thanks or appreciation is concerned, I might just as well have been putting hay in front of you. So today I thought I'd try it." But it didn't work. The men simply believed that she had been a little "teched" by the sun.

All of us need a word of praise now and then if we are to do our best work. I suppose this has its basis in our realization that mighty few of us are apt to win either fame or money in large quantity. So we need praise to bolster up our self esteem--or what we think of as our self respect.

Princess Alexandra Kroptkin tells in one of her essays of a millionaire friend of hers whose head accountant committed suicide. The man's accounts were in excellent shape and his reputation spotless. No reason for his act could be found until a letter addressed to the employer turned up. In it the deceased man had written: "In 30 years I have never had one word of encouragement. I'm fed up."

The Princess goes on to say that the wisest man she ever knew once remarked to her that if people did no more than they had to, life would come to a standstill at once. It is the bit over and above what we are obliged to do that counts most and a sense of duty alone will never call forth that extra bit. Only devotion backed by self-respect can win it, and such devotion comes only to those whose judgments are just, yet whose praise is willing, quick and generous.

Well, once upon a time Abou Ben Adhem's name led all the rest. It is now in second place, so far as our Business Office is concerned. We have received a letter: "I presume that field men, as a rule, take for granted any service they may get from the Washington office," it says. "I believe, however, that those of us in the field who may have had dealings with the Business Office of the Division of Fruit and Vegetable Crops and Diseases, have found our wants cared for very efficiently. So I, for one, appreciate the manner in which my various requests have been handled. Please accept my thanks for this fine service."

While our Business Office endeavors to handle, as promptly as possible, all the multiplicity of affairs that clear through it, and to serve all members of the staff alike, it will be only human nature if it should be found difficult to avoid giving the writer of the above letter some preference!

THE FRANKING PRIVILEGE

In general, the use of the penalty (franked) label or envelope is limited to sending through the mails, free of postage, matter relating exclusively to the business of the Government of the United States. This means that the frank may also be used, where justified, in mailing to Canada, Cuba, Mexico, New Foundland and Panama. Postage must be paid on other foreign mail and, of course, on air mail. An employee whose permanent station is Washington, D.C., may, while temporarily absent therefrom, register mail simply by writing on the registry label, over his signature, "Temporarily absent from Washington, D.C."

The franked envelope may be used for any correspondence relating to the official work of the employee; also, when he writes to a private party on official business, asking for information of value to the Government, he may enclose an addressed franked envelope for use in replying.

Publications issued by the Department; also publications issued by State agricultural colleges or experiment stations, containing valuable information on pertinent agricultural subjects, for persons asking for information, when accompanied by letter of transmission signed by the employee may also be sent under frank, but none of these publications should bear such written notations as "compliments of the author," etc. Franked envelopes or labels may also be sent to publishers for use in mailing copies of publications containing information of value to the Government and for which no charge is made; and franked envelopes or labels may be supplied to persons in possession of public documents for use in returning them.

We are not permitted to use the penalty envelope or franked label in connection with the general distribution of bulletins of stations, colleges, or other organizations; to distribute commercial, political, or religious matter; in buying or selling products for individual farmers or dealers; in sending for catalogues, price lists, etc. for farmers; in sending out notices of meetings of organizations of farmers or business men, or of State county or other fairs; in soliciting membership or funds for the support of any organization, or for relieving such organizations from paying postage on matter issued in their interest and which is properly chargeable with postage; or in connection with the promotion of any work other than that for which the employee is appointed. A frank is not to be furnished a dealer for use in mailing material, bills or vouchers, since it has been ruled that such expenses for postage are part of the regular business transaction and not properly chargeable to the Government.

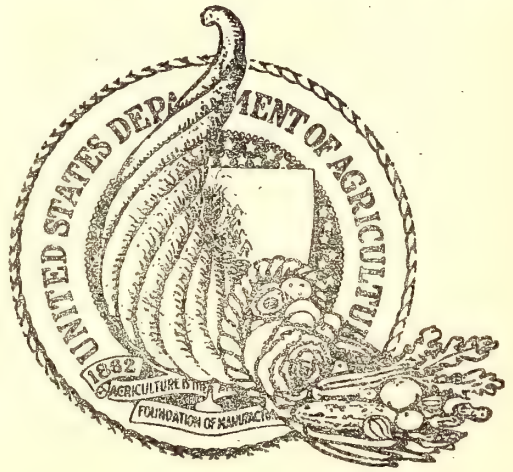
With the exception of single books and public documents, the penalty privilege outside of Washington, D.C. is strictly limited to packages not exceeding 4 pounds in weight.

Vol. 10 No. 3 February 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., February 15, 1938 No. 4

Precooling Precooling is the comparatively rapid reduction of the temperature of a commodity before shipment to or below the temperature it might ultimately attain during transit under conventional refrigeration practices, explained Mr. D. F. Fisher, discussing precooling practice, before the American Society of Refrigerating Engineers in New York City last month.

The principal objects are to retard ripening, control disease, and reduce costs of transit refrigeration. Fresh fruits and vegetables are like other living organisms with a more or less definite life span that may be lengthened or shortened, depending largely on the environmental conditions to which they are subjected, and to the incidence of diseases. Refrigeration has a most important influence on both these factors.

When a fruit or vegetable product is harvested it is cut off from the source of additional food supplies and its storage life depends upon reserves stored in its own tissues. The rate at which these reserves are used up depends largely upon the temperature at which the product is held. It is, roughly, doubled by each rise of 18°F. up to 110°. The importance of precooling may be indicated by considering apples, where the effect of a single day's exposure to 70° is equivalent to ten days exposure at 32° so far as shortening their potential storage life is concerned!

Too, many precooled products may be shipped under initial ice only, whereas without this precooling they would require standard refrigeration at a much higher cost. A further saving may also be effected through the heavier loadings made possible by precooling. The Medford, Oreg. pear growers, for example, save $250,000 a year by precooling pears and shipping in 720-box loads instead of the 520-box loads previously employed, and the pears reach New York in just as good condition.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

Within the past 5 or 6 years car precooling in particular has increased astonishingly. It is estimated, for example, that in California alone in 1936 more than 60,000 cars of fruits and vegetables were precooled after loading. This has given rise to a mobile precooling service operated by ice manufacturers and companies which specialize in precooling, so that the advantages of prompt precooling are now possible at many isolated loading points where other refrigerating service is not available.

The railroads have for a number of years been offering car precooling service in California, and operate special plants for the purpose at assembly points. These precooling plants have sufficiently capacity to handle many cars at once. Cold air is blown from a large heavily piped bunker through the loaded cars, the air intake being either through one of the doorways or through the ice hatches in one end of the car, fitted with special plugs suitably insulated and carrying insulated, flexible air-intake ducts. The return air is taken from the hatches in the other end of the car through similar air ducts. In some plants, facilities for reversing the air are provided, adding to the efficiency of the service.

The method commonly employed with these mobile units is one that was developed in connection with our investigations and utilizes removable fans to draw air through mixtures of ice and salt in the bunkers of the car, blowing it over the top of the load, and thus reversing the normal air movement in a refrigerator car. The top instead of the bottom layer in the car is cooled first, the normal difference between the two greatly reduced, and eventually all parts of the load are brought to nearly the same temperature. In non-precooled loads, of course, the top layer usually remains at an undesirably high temperature for several days or possibly throughout the entire transit period.

The bunkers are filled by adding alternate layers of ice and salt, using fairly coarse chunks of ice in the bottom and chopping it fine on top and tamping to settle it well, but without packing it so that air cannot be drawn through it. The amount of salt used is ordinarily 5 percent of the weight of ice in the bunker, adding part of the salt gradually as the bunker is being filled out, reserving most of it to be placed on a bed of finely chopped ice near the top and then covering with a final layer of finely chopped ice.

Mr. Fisher pointed out also that regardless of the type of precooling apparatus used, the packaging of the product has an important bearing on the rate at which it can be precooled, hence the emphasis his section has been placing on the designing of improved packages for shipping fruits and vegetables, new peach and strawberry baskets of our design now being extensively used by growers and shippers.

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

"During the past week I have continued summarizing the data for the 1937 season," he writes January 22. "Since growers are usually in doubt about making the 4th application, if the season is dry, or making an extra application, which would be five, if the season is unusually wet, there has been considerable discussion about the damage caused by the scab disease after August 21. With this in mind Mr. Large and I have tagged 1051 nuts from sprayed trees using our standard classification system to determine if this scab disease increased materially after August 21. Of course, some of these nuts dropped from scab and other causes, but we harvested a total of 687 nuts from the 1051 tagged nuts.

"The interesting part of this experiment is the fact that not only did the No. 1 nuts, which were free from scab at that time, mature meats of excellent quality and have a high cracking percentage of meats, but the No. 2 nuts which showed a 1-3 initial infection, and the No. 3 nuts showing 4 or more initial infections, matured nuts of similar quality to the No. 1 nuts. There was no change in the cracking percentage of meats or the quality of kernels until we reached the 4th and 5th classes.

"This data is even more interesting when we consider that the season of 1937 was ideal for the development of the scab fungus. There was an even distribution of rain as well as ideal scab infection periods from June on through November, May having been theonly month that we did not have an abundance of rainfall.

"The weather here during the past week remained unseasonably warm with temperature ranging from about 55°F. to 80°. However, there has been no indication, as yet, of premature foliation of plants, such as peaches, pears, etc....

"It seems that just as soon as the pecan growers overcome one difficulty another one 'pops' up. This is what happened recently in the case of the manufacturing of pecan buttered ice cream: The health authorities are getting in behind the crackeries and since a large percentage of the nuts are sold as nut meats, unless the crackeries can satisfy the Public Health authorities that they are cracking these nuts under sanitary conditions the pecan industry is going to be seriously affected. As soon as we can obtain more information from the crackeries and ice cream manufacturers as to what the health requirements are, perhaps we will be able to give them more assistance in helping overcome this problem. It is not a local problem. A news item from San Antonio, Tex. states that approximately 8,000 workers employed in cracking plants there are going to be affected unless an agreement can be reached between the crackeries and the health authorities."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Most plants are still dormant although peach buds are beginning to swell a little, and Japanese magnolias are beginning to bloom," he writes from the U. S. Pecan Field Station and Laboratory on January 22. "Unless a little cooler weather occurs soon we may again see irregular foliation of many plants due to insufficient cold weather."

C. E. Schuster, Corvallis, Oreg.

Writing of general activities, he says under date of January 22: "It is raining more or less all the time. The weather is mild and the filberts are in full bloom. The pistillate flowers on the Barcelona are probably at their height, while the pollenizers are just beginning to shed pollen well.

"The season has been so mild that they have been forced to mow the campus lawns in January and from the way the lawns are growing the mowing will have to be repeated before long, unless the weather changes."

Alton H. Finch, Tucson, Ariz.

"The present winter is the warmest experienced in Arizona since the development of commercial horticultural industries," he writes under date of January 17th. "We will be much interested to note character of foliation and fruiting in the tree crops next spring. If the pecan is at all susceptible to delayed foliation it should be apparent this year."

Howard E. Parson, Shreveport, La.

Writing from the U. S. Pecan Disease Laboratory on January 22, he says: "Work on getting data on the quality of nuts from trees in plots in the Fullilove orchard, sprayed now for two seasons, has been finished.

"In a previous report it was pointed out that nuts from sprayed trees in this orchard this fall are smaller than nuts from unsprayed trees. However, further data reveals that better yield and quality of nuts from sprayed trees offsets the difference in size. The average yield per unsprayed tree this fall was 190.7 pounds, whereas the average yield per sprayed tree was 234.6. Approximately 10 percent of the nuts from the unsprayed trees were in the U.S. No. 1 Grade, whereas approximately 66 percent of those from the sprayed trees were in U.S. No. 1 Grade. This increase in yield and better quality of nuts from sprayed trees should more than pay for the cost of spraying the trees this season. It is hoped that in 1938, which will normally be expected to be an off year, that the sprayed trees will come back with a much better crop than the unsprayed trees."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Mild weather continues to prevail in western Oregon," he writes January 22d. "The minimum temperature has not yet fallen below 28° at Corvallis. It looks very much as if we are going to have an early spring. Crocuses are coming into bloom and tulips and narcissi are through the ground. Many pistillate flowers of the Barcelona filbert are now in full bloom. The Nottingham and other early pollenizers are now shedding pollen."

C. L. Smith, Austin, Tex.

"Due to the dams recently constructed on the Colorado river, we have had no floods here so far and do not anticipate any," he writes January 22d. "Some of the pecan groves and farms along the Colorado river will no doubt be greatly benefitted from lack of floods, while others will eventually miss the silt deposits with the accompanying nutrient elements."

Milo N. Wood, Sacramento, Calif.

"Much of the time during the week was taken up with evaluating the hybrid almonds at Davis," he writes for the week ending January 1. "Special attention has been given to segregating the bitter nuts from the sweet by means of a chemical test. By means of this test, all the bitter almonds are being segregated from the sweet samples. It seems that the crosses of the sweet almonds produce bitter progeny at a ratio of 1:3 as has been the case in the past. However, the ratio apparently varies according to the cross. A wide range as to the amount of bitterness exists, some samples being slightly bitter and others exceedingly bitter and some medium in bitterness. The amount of bitterness can be rapidly determined by the test, to a rough extent."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Atherton C. Gossard (Nut Fruit Investigations).

"The pecan trees which were planted early in December, wrapped with newspaper and mounded well with soil, were examined during the week ending December 11 for cold injury. The under bark in the 4 to 6 inches of the tops which were exposed above the paper wrapping was badly injured. The portion of the tops which was under the newspaper showed some brown streaks, though they were not severe enough to indicate that the tops had been killed. The 10 to 12 inches of the tops which were mounded with soil remained in good succulent condition, and will provide sufficient buds for the trees to start, in case all above that is killed. We hope, however, that the injury above the mounds and under the newspaper wrapping is not that severe."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (Vegetable Crop Investigations)

"Air mail service to the Meridian airport has been resumed," he writes January 29th. "It is now possible for us to make use of overnight mail service between Meridian and Washington.

"Previously reported potted off sweetpotato plant crowns--plants which have already produced a crop of roots--growing under high temperature are showing signs of light to heavy bloom in some of the selections."

He had written January 22: "Tomato experimental plot plans for our work here and at Crystal Springs were developed, a trip made to Crystal Springs, and final plans made for the 1938 work. Plantings of cabbage and peas are apparently being much increased with about the normal area devoted to tomatoes in the Crystal Springs section this year. It is gratifying to observe greater interest in better and more reliable seed sources with all crops and the 'time tried and much abused' practice of mixing tomato varieties seems to be passing into history. Cabbage plants are small but of good color--Golden Acre and Copenhagen Market being the main varieties. Some growers have tomato plants sufficiently large for transplanting to cold frames now. Home gardeners in this section are rapidly developing 'spring gardening fever,' with the result that planting of cabbage, onions and other frost hardy vegetables is going ahead."

J. M. Lutz (Fruit and Vegetable Storage and Utilization Investigations)

The relative keeping quality of sweetpotato varieties under adverse temperature conditions showed very striking results, according to Hoffman and Lutz. A few showed little or no loss from decay or low temperature injury, while others were almost a complete loss. The nature of the low temperature injury also seemed to vary with different sorts. Some varieties showed injury only on the skin, whereas others that appeared sound externally proved, when cut, to be almost completely broken down.

"Very frequently those of us engaged in fruit and vegetable preservation are asked if a product preserved by a certain method approaches that of the fresh material in quality, even though there is no appreciable deterioration due to pathological or physiological causes," comments Lutz in an earlier report. "In the case of the Klondike strawberry as grown so extensively in the South, it appears that we have a method of markedly improving the quality of the berry by storage. The North may think that it won the war, but the South is still retaliating by shipping several thousand cars of Klondike strawberries annually to the Yankees! The Klondike seems to be superior to other varieties as regards its shipping qualities and its field characteristics in many sections of the South, as reflected by the fact that 99 percent of the acreage in many sections is Klondike.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS

J. M. Lutz (continued)

"Despite this fact, the flavor of the Klondike leaves much to be desired, as it is an extremely sour berry (contains about 1 percent acid). Southerners wonder how the Northerners eat the darn things, but are thankful either to the lack of discrimination or to the fact that there is nothing else in the shape of strawberries available at the time of the year that Klondike strawberries are shipped.

"Mississippi Klondikes seem admirably suited to freezing preservation. Several samples of frozen berries were cut early in December and the Klondike was exceptionaly fine in both color and flavor. In fact, we could not understand how a berry as poor as the Klondike could ever possess such good quality. One remarkable thing observed was the excellent retention of both color and flavor in non-airtight containers, contrary to general experience with strawberries."

N. H. Loomis (Small fruit investigations)

"One peach tree in full bloom, evidently a seedling, was observed in South Mississippi, and several others were reported from the same section," he writes January 22. "Pear trees there were beginning growth and many of them had fully expanded flower clusters just ready to open. These were mainly sand pears. Flowering quince and yellow jasmine (Jasminum primulinum) are in bloom in central Mississippi. These signs of 'spring', however, may be considered as normal for this section.

He had written earlier that cuttings had been made of various grape rootstocks for propagation. "More dead vines are showing up all the time in the 'bunch grape' vineyard," he wrote. "For the most part these dead vines failed to mature their crop last summer and then defoliated early. Some of these vines made 15 to 20 feet of growth. It becomes increasingly evident that long lived varieties should be one of the main goals of our breeding work.

"A minimum of 70°F. was recorded on Tuesday morning, December 7, at ground level in the strawberry planting. This was 5 degrees lower than the reading which was taken less than 300 yards away on slightly higher ground and in a standard weather shelter. The strawberry planting is in a low place that has rather poor air drainage."

STRAWBERRY HYBRIDS AT CHEYENNE, WYO.

The Cheyenne Horticultural Field Station reports under date of January 22d that crosses (F_0 seed) involving wild and cultivated strawberry types, are beginning to ripen in the greenhouse.

DECIDUOUS FRUIT INVESTIGATIONS

George F. Waldo, Corvallis, Oreg.

"The greater portion of the week was occupied in examining canned raspberry selections," he writes January 29th. "More than 15 selections were examined, out of which there are about 45 which are of sufficiently high quality to warrant further consideration. Many of these were exceptionally fine. Those which have been found to be worthy of further consideration are being propagated in larger numbers for further testing. This is usually done most quickly by taking root cuttings, of which there are now 50 selections in the greenhouse and more will be brought in.

"At the present time the Cuthbert red raspberry is the main red raspberry grown. The Marshall is practically the only strawberry grown for freezing purposes, and Redheart is grown for canning. The Redheart is an excellent canning berry in this part of the country, but does not do well on the low lands which are quite wet in winter. It seems to thrive best in the hill lands which have just recently been cleared and the soil being very loose and high in organic matter.

"They have found that fertilizing with chicken manure, however, increases the growth of plants, or rather quickly forces the plants into vigorous growth, which causes the plant to quickly die when the dry hot weather comes in midsummer. Growers are not satisfied with Redheart principally because it does not yield as much as Marshall."

Elmer Snyder, Fresno, Calif.

"Pruning and connected data will be completed at the Fresno station by February 1," he writes January 22d. "The Shafter grape plot will be pruned the last week in January, and the Oakville plot completed during February.

"The distribution of grape rootstocks and varieties comprises a certain amount of our field operations," he continues. "This year requests for grape cuttings for experimental work have been received from multifarious sources. In filling these requests, grape cuttings not obtainable from commercial sources have been furnished to individuals, cooperators, and experiment stations.

"Rootstocks resistant to root knot were shipped to Australia; grape species were sent to Lithuania; and vinifera varieties and rootstocks for trial were sent to 14 States in addition to our local distributions for various tests in California.

"Occasionally reports received from similar distributions made in previous years supply interesting and valuable information."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

Writing from the fruit disease laboratory on January 29th, he states that the Extension Service of the Arkansas Agricultural Experiment Station has released "The 1938 Agricultural Outlook for Arkansas," containing some items of especial interest to us; one in particular about the strawberry crop.

Arkansas strawberry growers have better prospects than for the past three or four years, it says. In the past two years there has been a slight price increase even in the face of increased production. The second early group of States producing strawberries (including Arkansas, southern California, Georgia, North and South Carolina, Tennessee and Virginia) has a 13 percent increase in acreage but most of this is due to an increase in Arkansas from 7,400 acres in 1937 to probably 12,000 acres in 1938. This will somewhat restore Arkansas to its past acreage, which was destroyed by droughts. The condition of all beds is much better this year, but the production will, of course, be governed by frosts and rainfall.

As to grapes: Slightly higher prices are expected for grapes in 1938 than were paid for the unusually large crop of the 1937 season. However, the production will probably be larger than for the 1933-37 average. During the past season, Arkansas produced a bumper grape crop of 13,000 tons. With a normal season, the 1938 planting should produce between 9,000 and 10,000 tons.

He had written January 22: "According to reports in a local newspaper, Government inspection of all strawberries moving in interstate commerce is favored by 50 members of the Fayetteville Fruit and Berry Association, who were present at a meeting in Fayetteville on January 15. A resolution passed at the meeting asked that Congress pass a bill providing for such inspection. The resolution states that 'proper handling and packing of berries is an important factor in the sale and marketing, and proper preparation for market can only be insured through a thorough and impartial inspection of each shipment at the shipping point.

"At the meeting on January 15, berry growers from all sections of the county were present. The resolution passed by the Fayetteville association will be presented to the Farming on and Springdale associations, a director said. At present there are about 250 acres in strawberries by members of the Fayetteville Association, and a 50 percent increase in acreage is expected this year. Maximum acreage in strawberries for Washington county as during the war when about 7,000 acres were in cultivation. The drouth wiped out all but about 250 acres, but the county this year will have about three times as much, a grower said."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Blueberry pruning is progressing rapidly," he reports January 15. "The rain of the 12th gave a good opportunity for growers to observe where their drainage was inadequate; as the ground was not frozen at that time. A number of growers have been cleaning out ditches.

"In our continued visits to blueberry fields we have found one condition to be much more general than we had thought a month ago; namely, an unusually light set of blueberry buds. In some fields the wood growth is very satisfactory and the set of buds nearly normal. In many other fields, however, while as much wood was formed during the summer as is usual, a considerable part of this growth did not mature properly, and very few buds were set. This can probably be explained by the fact that the unusually heavy crop inhibited early growth, while the heavy and frequent rains late in August and early in September stimulated an unusual amount of fall growth, which set only terminal buds and did not ripen well. Most varieties of blueberries normally set several times as many buds as they can support. In some fields even the Cabots will not need any tipping next spring.

"Scattered over the blueberry area in commercial fields are numerous fertilizer test plats. So far as we have been able to see there is little relation between the fertilizer applied last spring and the light set of buds in the fall.

"The annual report of the manager of the Blueberry Cooperative Association shows that New Jersey marketed approximately 27,000 bushels of cultivated blueberries in 1937, which is an increase of about 40 percent of the preceding year, which at that time was the largest in history. The berries were marketed in an orderly manner at a generally satisfactory price, although the latter was not so high as that of 1936, since the large crop of cultivated fruit coincided with one of the largest crops of wild berries ever marketed."

E. S. Degman, Medford, Oreg.

Writing from the U. S. Pear Field Station on January 18th, he says: "Several orchards have been condemned on account of blight and were being removed by the County until injunctions stopped the work. The question is now before the County court.

"At its annual meeting January 15, the Fruit Growers League endorsed the program of the American Horticultural Institute Inc., for voluntary removal of marginal orchards."

ADMINISTRATIVE NOTES

Foreign Origin — We have recently received from various points in the field vouchers covering materials and supplies, some or all of which were of foreign origin, as indicated by the vendor, but without an accompanying statement other than that they were not obtainable in this country. All such vouchers must be accompanied by a statement in regard to these foreign products. It is necessary, therefore, that the purchaser (This means you!) furnish with such vouchers a strong statement that can be used in preparing the transmitting letter for the signature of the Chief of Bureau, indicating the use to be made of the products and why those of domestic origin will not answer the purpose. Better still, if time permits and you are in doubt as to the origin of the desired product, submit the order through the Washington office. Hereafter vouchers received covering foreign products and unaccompanied by a statement as to the need for same will be returned for this information.

Insurance — Where articles are purchased f.o.b. contractor's shipping point and contractor is instructed to make delivery via parcel post, the Comptroller General's office says the contractor may properly be advised that the parcel post package should not be insured. Where no such notice is given, however, and the contractor in good faith pays the postal insurance, the charge may be reimbursed if it is otherwise in conformity with the Government Losses in Shipment Act.

This goes for shipments by parcels post, but in no other instances may insurance be paid from our appropriation. For instance, valuation charges on express shipments are really a form of insurance and the Department at the present time is trying to obtain a ruling on this. Also, remember that express and freight shipments must be made on a Government bill of lading when we are to pay the cost of transportation. Sometimes the shipper forwards materials by express collect that was supposed to be sent by parcel post. In this case the express agent will usually accept a bill of lading at destination to cover the charges. If not, then the best method of handling is to issue a "Certificate in Lieu of Lost Bill of Lading," using a number from a bill of lading on hand and destroying such bill of lading. Enter on the certificate the information shown on the express waybill. If you do not have these forms you should apply to the Business Office for a supply.

Leave — An employee discharged because of insurbordination, etc. may not be paid for annual leave not granted prior to his separation, says the Comptroller's office, even though the charge is later withdrawn. That is, leave must be taken before the employee's definite separation from the service. There is no provision in law to allow credit for leave after separation, even though a mistake may have been made.

ADMINISTRATIVE NOTE

Date of Birth — Effective from January 1, 1938, the Civil Service Commission established procedure to be followed to make certain that the correct date of birth is secured in connection with each new appointee. The new regulation is being strictly enforced, so it is very important that we take every precaution to make sure that dates of birth given in connection with appointments are absolutely correct.

The evidence submitted to prove the date of birth may be a certified copy of public record showing date of birth and also date of the presentation of the birth record for entry; a certified copy of baptismal or other church record; family record made at the time of birth; statement of practicing physician, certifying that he attended the birth, etc.

If this evidence is not available, a statement to that effect should be made and correspondence in support of the statement submitted. The following may then be submitted for consideration: school records, naturalization papers, insurance policies, affidavits, etc. If in doubt about the matter, ask us and we can probably help you by giving address of State custodian of records of vital statistics, etc.

Salary — A recent ruling by the Comptroller General's office points out that the salary of an employee is chargeable to the particular appropriation under which he is employed at the time, whether he be actually on duty or on authorized leave of absence with pay. There is no authority, that is, for a transfer of funds between agencies to cover leave accrued but not taken by an employee while temporarily loaned or detailed from one agency to another

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Holidays — A memorandum dated February 2, signed by P. L. Gladmon, assistant director of personnel, says: "There is quoted below for your information and guidance a letter dated January 28, 1938, from the Acting Executive Director of the National Emergency Council to the Secretary of Agriculture:

> 'The President has approved the following schedule of holidays affecting Federal employees during the remainder of the calendar year 1938:
>
> | | |
> |---|---|
> | February 22 | September 5 |
> | May 30 | November 24 |
> | July 4 | December 26 |
>
> 'Inasmuch as Christmas this year and New Year's Day, 1939, fall on Sunday, the morning half days of December 24 and December 31 will be included in the above schedule of holidays.'"

DISTRIBUTING PUBLICATIONS

All orders for publications should be sent to Mr. W. W. Gilbert for checking and forwarding. The law (U. S. Code, Title 44, Sec. 95) provides that the work of wrapping, mailing and otherwise dispatching publications for public distribution be handled at the Government Printing Office, though, of course, we are permitted to mail bulletins with correspondence, where passages are marked to answer inquiries, etc.

Where less than 8 publications are to be sent, furnish an addressed envelope (about 7x10-1/2 inches) with the series and number, and copies of desired noted on the inside flap--"2 copies of Farmers' Bulletin 1447" etc.--with initials of the person ordering. No order is needed where less than 8 are being sent, but where 8 or more publications are to be mailed use the order forms--No. 75 (white) for Farmers' Bulletins and Leaflets; No. 74 (blue) for other publications. Along with the order send an addressed frank. Use ungummed franks as the Government Printing Office mailing equipment cannot handle the gummed franks.

Orders, franks, and envelopes, should have the name of our Division typed or stamped on them, and bear the initials of the person ordering the publications so that in case the bulletins are out of stock or otherwise unavailable he may be notified to that effect. Of course, so far as practicable you should find out whether publications are available before you send in your order. It is useless, for example, to order Bureau of Plant Industry Bulletins or Circulars, Department Circulars (this is the old series--the present series is known as Circulars), or Department Bulletins. These are no longer available except where copies may be in the hands of the author or issuing Bureau. Journal of Agricultural Research separates may be secured from the authors or from the Superintendent of Documents, Government Printing Office, Washington, D.C., who usually prints a limited edition for sale at 5 cents each. None are at present available for general distribution.

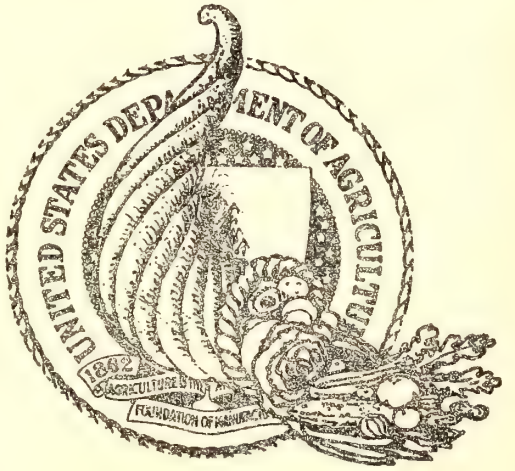
Not more than 50 copies of a publication may be sent at one time to a Washington, D.C. address; more may be sent to a field address but where 25 or more are ordered a note explaining the need for them should be attached to the order, and sufficient addressed franks sent to cover mailing. Where publications are sent out at the request of a Member of Congress, the 5x8 Congressional order form is used so that the Office of Information may charge the publication to the Congressman's quota. Orders for publications to be sent abroad are prepared on Form 89 (original) and 81-a (duplicate) both being sent to our Supply Section so that arrangements may be made for paying postage. Use the 4x5 foreign label for these but do not seal the package. If the publications can be supplied by the Office of Information (are still available for general distribution, that is) they should not be sent with the foreign order; otherwise they must be sent with it, the order having the word "herewith" typed below the title of the bulletin. Where the same bulletin is being sent to a number of addresses (domestic or foreign) one order is sufficient, noting on it: "To the ___ persons whose names and addresses are given on the accompanying franks."

Vol. 10 No. 4 February 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



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UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. X Washington, D. C., March 1, 1938 No. 5

Publications The annual report of the Bureau of Plant Industry shows that during the last fiscal year 101 publications (80 new and 21 revised) were contributed by the Bureau in the Department series. These comprised 40 papers in the Journal of Agricultural Research, 17 technical bulletins, and 44 other items, semitechnical or popular. In addition there appeared in outside scientific agricultural and commercial publications during the year 390 articles written by members of the Bureau's staff. And, of course, the Bureau provided the major part of the material for the Department's Yearbook of Agriculture for 1937, contributing 33 papers dealing with the genetics and improved breeding of vegetables, fruits, nuts, etc.

A rough check indicates that approximately 35 percent of the publications in the Department series contributed by the Bureau, were prepared by workers in our Division, who also supplied 24 of the 33 Yearbook papers. Since these contributions were supplemented by a score or more of informal mimeographed "briefs" issued to meet special conditions, and thousands of letters dictated to meet some individual's special problem, it appears that we were quite successful in distributing our product--information--promptly and effectively. No research job is ever finished until the results are made available to those who need them and can use them, so getting our findings distributed promptly is a matter of major importance.

Since quality as well as quantity must be weighed, it is gratifying to know that our publications have met with a very favorable reception. Some of them have been translated into foreign languages, and a number have been incorporated into textbooks used here and abroad. Too, we are approaching the ideal of making publications available on the growing, handling, diseases and utilization of all of our major fruit and vegetable crops.

SUBTROPICAL FRUIT PRODUCTION

A. D. Shamel, Riverside, Calif.

"Our attention was called recently to an interesting Mexican lime tree located at San Diego, Calif., that evidently originated from a bud mutation," he writes January 25th. "This tree is one of 12 Mexican lime trees that were planted during the spring of 1935.

"This tree does not have any thorns in contrast to the very thorny growth on the adjacent Mexican lime trees. An examination of this thornless tree on January 13, 1938 showed that in 12 fruits there were only 7 fully-developed seeds, and 2 rudimentary ones, with not more than 1 seed in a single fruit. Whereas in fruits from a normal Mexican lime there were 36 fully developed seeds and 7 rudimentary ones. The appearance and juice characteristics of the fruits from the thornless tree were apparently identical with those of the normal Mexican fruits. So far as I know, this is the first report of a thornless Mexican lime tree, and of a tree of this variety bearing such nearly seedless fruits.

"The Bearss (lime) trees in California have proved to be somewhat more resistant to low temperatures than those of the Mexican variety, are practically thornless and bear relatively large, seedless fruits. For these reasons the Bearss rather than the Mexican lime has been planted in California during recent years. If a Mexican lime without thorns and with few seeds in fruit were found available, interest in planting of such a Mexican strain might occur."

R. W. Nixon, Indio, Calif.

Writing from the U. S. Experiment Date Garden on February 1, he says: "Date pollination will soon be under way. Spathes are showing here and there, and a few growers report occasional flowers open. The approach of the flowering season this year is being awaited with interest, and in some instances with more or less apprehension because of uncertainty as to the effects of the freeze of January 1937. This freeze last year resulted in a 50 to 100 percent defoliation of palms throughout Coachella Valley, the amount varying according to size, variety and location of palms. The 1937 flowering was not affected, since the buds, formed in the axils of leaves produced in 1936, had not begun to emerge and were well protected by the enveloping leaf bases and fibre.

"Our fruit thinning experiments have shown that a heavy crop one year reduces the number of flowers the next spring. Preliminary

SUBTROPICAL FRUIT PRODUCTION

R. W. Nixon (continued)

pruning tests indicate that a drastic reduction in number of leaves reduces the fruiting capacity of the palm. Therefore, growers were advised to thin the fruit in proportion to the loss of leaves, but in some instances this was not done and palms severely damaged were allowed to bear a heavy crop in 1937.

"It is very questionable whether such palms will produce many flowers this season, although this is the first time since the development of a commercial date industry in the United States that there has been an opportunity to observe the effects of temperatures low enough to cause serious defoliation. Numerous observations were made last year in commercial gardens, and the same palms will be checked again this season as to flowering and fruit production."

BRITISH BUYERS FAVOR U.S. CANNED GRAPEFRUIT

A release distributed under the above heading by the Department's Press Service on February 27th, says that American canned grapefruit segments and juice have become increasingly popular in the United Kingdom. The United Kingdom is the principal export outlet for grapefruit and grapefruit juice canned in this country.

"Exports of canned segments and juice to the United Kingdom were but a quarter of a million cases in the 1931-32 season," says the announcement. "These exports increased to more than a million cases this past season. During the same period, the United States production of canned segments and juice increased from a million cases to a production this past year of 10 million cases."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"Peach buds throughout the district are visibly swollen, plums will be in bloom during the coming week, and many ornamental plants and shrubs are in blossom," he writes from the Fayetteville laboratory on February 12th.

"Apple buds seemingly have not responded but another week of continued moderate weather may bring changes in their condition. Fruit growers (particularly the peach growers) are beginning to get uneasy about the continued warm weather."

DECIDUOUS FRUIT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Attention has been given to the hybrid almond trees in the trial plots down the coastal section and up the valley as far as Chico," he writes January 29th. "Also information was obtained upon blooming varieties and upon the condition of the buds in the 8-31 and 8-32 hybrids and others. For the most part the trees have set heavy crops of buds and from that standpoint the prospect of crops in the various districts is good.

"We are finding that the hybrid trees on Myrobalan stock, one or two of which were distributed to each of various trial plantings, make a very stunted growth. On this stock, too, they bloom fully two weeks in advance of those on ordinary almond stocks. The trees on Myrobalan stock, for example, have been in bloom for a week now, whereas the hybrids and the Ne Plus Ultra variety on ordinary stocks show no sign of blooming as yet except that the buds are swelling. Apparently, when the weather is warm, there is at least two weeks difference between the time of bloom on Myrobalan and on ordinary stocks.... Walnut orchards in the various districts visited appear to be in pretty good shape regarding catkin buds in spite of last year's serious mite infestations."

C. F. Kinman, Sacramento, Calif.

"We have had some rain almost every day for a couple of weeks and orchard land is soaked and the rivers high," he writes February 8th. "The rainfall to date is considerably above normal. In one orchard near Marysville where I have a root study pit, the water was within 6 inches of the surface of the ground last week. Until that time I had not been able to get to the pit since mid-December as the orchard was overflowed to a depth of about 5 feet due to a break in the river levee. It will be interesting to see how this find old orchard performs next summer after standing level full of water most of the winter."

M. A. Smith, Columbia, Mo.

"We have had a very mild winter in Missouri but weather during the first two weeks of February has been unprecedented," he writes on February 14th. "In the Ozarks the almost unbelievable excess temperature during the first 13 days of February amounted to 310 degrees--or an average of 23.7 excess degrees daily. On February 11th the temperature of 65°F. was 29 degrees in excess of normal. Incidentally this temperature is the normal for May 17th.

"Mr. P. H. Shepard, Director of the Missouri State Fruit Experiment Station at Mountain Grove, reports that all peach varieties at the station have come through the winter with a high percent of live buds. He indicated that the extremely warm weather of the past 13 days had caused considerable activity of peach buds but from available records estimates that at the present time peach buds could withstand a temperature of 5° above zero."

MUSCADINE GRAPES

Charles Dearing's bulletin on muscadine grapes is now available for distribution. It has been issued as Farmers' Bulletin No. 1785, "Muscadine Grapes," 36 pages, with 27 excellent figures. We've needed it for some time as Plant Industry Bulletin No. 273, "Muscadine Grapes," issued in 1913, has been out of print for years.

Muscadine grapes, of course, are indigenous to the southeastern section of the country, where they grow in greater or less profusion in the wild state. Through careful selection from the wild grapes, and by scientific breeding, there have been developed a considerable number of varieties particularly adapted to the home needs in the Southeast, both as table grapes and as raw material for a variety of food and beverage products. Scuppernong is the variety in greatest demand and for which the wineries pay the best prices. Other important sorts are the Mish, James, Flowers, Thomas and Eden.

The Scuppernong is probably the oldest cultivated variety of native American grapes. There is a legend that an old vine growing on Roanoke Island, planted by Sir Walter Raleigh at a time when his attention was momentarily diverted from tobacco, was the original Scuppernong. However, those who have investigated mostly closely the origin of the variety believe the original vine grew wild in Tyrrel County, N. C., in the vicinity of the Scuppernong River.

The bulletin sets forth in nontechnical form the information accumulated by the Department over a considerable period of years on muscadine grape varieties, their breeding, culture and uses. They are principally used for wine making, of course, this wine being made by vineyardists and sold retail or by large companies which operate as national organizations, having wineries at strategic points throughout the country. At the present time, small local wineries are being established. The wine made from the Scuppernong and other muscadine grapes has a characteristic flavor and quality and has always been in demand. It is a distinct type of native American wine.

All muscadine grapes make excellent jellies, preserves, catchup and other culinary products, certain varieties being particularly adapted to each of these products. Canned grapes are used by pie bakers. As most of the muscadine grape varieties shell from the cluster when harvested, they are not generally adapted for shipping, but certain varieties can be shipped successfully. Their shipment as fresh fruit, however, is a relatively undeveloped phase of the industry. Our present muscadine varieties are likely to be killed where temperatures as low as 0^{o} occur, and may be injured at somewhat higher termperatures. They are relatively resistant to grape diseases and insect pests, however, and do well with a minimum of care, but, like most fruits, respond favorably to good cultural treatment.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

Writing to Dr. F. P. Cullinan under date of January 31 he said: "Fruit buds of Early Hiley, not yet in the pink stage, but with pink petals within the bud, were not injured by last week's minimum of 18°F.

"About 75 percent of the bloom on Honey and Peento varieties, now in the pink stage, was killed, however. During this cold spell 119 hours below 45° accumulated, bringing the total to date past the 1,000-hour mark--1001, to be exact! With more cold weather predicted, fruit buds on all varieties are being held back nicely, although they are now out of the rest period....

"Another application of sprays containing chemicals was made to five varieties growing near Fort Valley on Saturday. Sprays applied in the same orchards two weeks previously had not stimulated bud development noticeably, but some twig injury had occurred with the DNO sprays. Injury is also appearing on DNO treated twigs in the green house, even at the lower concentrations. Elberta appears to be much more susceptible to injury than other varieties. Dinitrophenol sprays continue to look promising."

R. B. Wilcox, Pemberton, N. J.

"Some growers have finished their pruning of the blueberry fields and with most of them the work is more advanced than usual at this time of year," he reports from the Cranberry and Blueberry Disease Field Laboratory on January 31st. "In fields where the set of fruit buds is very light, the pruning is being based on the number of buds, rather than on length of laterals as usual."

PECTIN HEALS WOUNDS

The Associated Press, quoted in the Department's Daily Digest, tells us that in the pectin which housewives use to make jelly, Indiana University medical experts have discovered a quick-healing remedy for wounds! The details were made public February 13th at Bloomington. Pectin, of course, is a jelly that comes from boiling fruits and vegetables. Apples are rich in it. Curiosity as to why scraped apple helps cure diarrhoea led to the wound-healing discovery. This suggested that pectin might have the power to kill germs. It proved to be a powerful germ killer--under certain conditions. Its effects depend on the acidity or alkalinity of the place where it is applied. In acid areas pectin often wiped out the bacteria. In alkaline environment, however, the jelly completely lost its antiseptic value.

BORON CHECKS INTERNAL CORK OF APPLES

Dr. Magness has given the Press Service an item for general distribution offering further proof that light applications of boron in the form of borax or boric acid control the widely-spread nutritional disorder of apples known as internal cork.

"The boron is broadcast directly on the soil within the spread of the tree branches," says the news release. "The application is effective whether made in the fall, or about three weeks before blooming time, says Dr. Magness. If borax is used one third pound is sufficient for trees under 15 years old, one-half pound for trees 15 to 20 years old, and one pound for trees 21 years old and older. Less boric acid is needed as it contains more boron. One-fourth pound is enough for trees less than 15 years old, one-third pound for trees 15 to 20 years old, and one-half to two-thirds pounds for trees 21 years and older. Both materials are inexpensive and cost about the same on the basis of boron content.

"After the application has been made it should not be repeated until the orchard again produces fruit, says Dr. Magness. Boron in excessive amounts is toxic to plant growth, although no injury has been observed on test trees that received as much as two pounds per tree.

"When either borax or boric acid was applied either in fall or spring in the latest studies, the fruit was virtually free of cork. From check trees which received neither borax nor boric acid, the fruit averaged only about 10 percent free of cork, less than 20 percent with slight cork and more than 70 percent with bad cork.

"The lack of boron causes brown areas to appear deep within the flesh of the fruit, especially in the stem end. However, internal cork has no relation to the surface type of spot, generally called bitter pit, which is prevalent on York Imperial, Baldwin and a number of other varieties, Dr. Magness emphasizes. Boron does not correct the latter condition.

"Internal cork apparently affects the Ben Davis group more seriously than other varieties, although Oldenburg, Yellow Transparent, Jonathan, Rome Beauty, and Grimes Golden also have suffered from the disease. None has been found in York Imperial, Stayman Winesap, or Winesap, but no extensive survey has been made to determine the extent of varietal susceptibility.

"The worst internal cork condition in the Potomac Valley area has been found on strong orchard soils with a limestone base. Those with sandstone base apparently suffer less. However, the boron treatment is effective on all soil types, and it may be applied in the fall as well as in the spring."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Pecan trees are showing no growth activity as yet, but many other plants in this section are showing at least swelling of the buds," he writes February 12th. "Kudzu is beginning to grow, pear trees are past full bloom, peaches are showing a considerable number of blossoms, violets are blooming, and vetch is making rapid growth.

"No rainfall was received this week and roads and fields are very dusty. To date we are about 6 inches short of the rainfall received during the same period in 1937. Cooler and rainy weather would be of great benefit to this section of the country."

Alton H. Finch, Tucson, Ariz.

"The month of January was one of the warmest in the history of the Southwest," he writes February 5th.

"This compares with January of a year ago in which the coldest weather in 25 years occurred. We are much interested in the influence of temperatures on the foliation and fruiting of trees next spring and have several experiments running in which treatments to modify temperatures and rest period are being used."

C. L. Smith, Austin, Tex.

"The weather has been so warm since the first of January that some of the peach trees and plum trees are in full bloom in this section and even farther north," he reports under date of February 5th.

"It is very unlikely that these trees will escape a frost later in the winter, and if the warm weather continues much longer it is unlikely that we will have a crop of peaches or plums this year."

J. R. Cole, Albany, Ga.

"The weather continued about the same as last week," he writes from the U. S. Pecan Disease Field Laboratory on February 12th.

"No rain has fallen and it is now very dry. We are also having unseasonably warm temperatures with a minimum of between 50° and 60°F. daily. Fruit trees and flowering shrubs are in full bloom and in condition to be killed in case we have a severe freeze."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman

"Peach and pear trees and many shrubs have made considerable growth at this time," he writes February 12th. "Pear trees and wild plums are in full bloom and peach buds are very conspicuous. The cover crop in the pecan orchard has made more growth than usual at this time of the year and is producing a beautiful green carpet over the orchard.

"The weather was for the most part clear or nearly so during the week, with no rain. Maximum temperatures were from 68 to 77°F. and minimums from 45 to 56°."

N. H. Loomis (Small fruit investigations)

Writing for the week ending February 5th he said: "Pruning in the grape vineyards was completed this week. A considerable number of dead vines were found in the Catawba, Ellen Scott and Goethe varieties. These vines in many cases had growth 10 feet or more in length and matured good crops of fruit. Just after harvest the foliage began to break down and continued until leaf fall. Many of these vines were dead before the first frost. It is interesting to note that all of these varieties have a high percentage of vinifera in their parentage."

ADMINISTRATIVE NOTES

Leave "Under the present law," says Bureau of Plant Industry Memorandum No. 976, dated January 27, 1938, "an employee can accumulate a total of 60 days annual leave. This amount can be carried over on December 31. With current leave becoming available January 1, an employee could have available a total of 86 days of annual leave.

"Furthermore, under present law, an employee has a legal right to use this leave. While the leave necessarily must be arranged with due regard for the work on which he is engaged, nevertheless, if requested, arrangements would have to be made so that the employee could utilize his leave at some time before he would lose it.

"An employee cannot arbitrarily determine when he will take the leave to which he is entitled nor can his administrative superior advise him when he must take the leave. Obviously continuing consideration must be given this problem by administrative officers; otherwise, serious disruption of work may ensue. It is suggested that all administrative officers supervising other workers give this matter careful supervision with a view to the utilization of leave by employees in such a way that the employee may receive a maximum benefit and interruption to Bureau work be at a minimum."

ADMINISTRATIVE NOTES

Returning Oil Drums

A painstaking mother of two small children was attempting to give them a serious idea of her anxiety to make them good children. She wanted them to be impressed with the seriousness of a mother's task. However, three-year-old Ann was completely overcome by the impossibility of ever living up to the high ideal her mother was setting for them. "Don't try to make us good, mother," she said, solemnly. "Just shoot us."

Don't be afraid we are going to have you shot, just because we keep reminding you that this and that should be done. As a matter of fact, we can't even prove that you are guilty. But somebody is holding out on the Navy Department in the matter of returning empty oil drums. The Assistant Director of Procurement is sending out another circular letter on the subject. He sayd, under date of February 5th:

"Under date of July 12, 1937, the Procurement Division issued Circular Letter No. 246 with reference to the return of empty drums under Contract NOs-48915 - it appears from later advice from the Navy Department that appropriate consideration was not given by all Federal activities to this circular letter. This office is again advised by the Navy Department that considerable difficulty is being experienced by The Texas Company under contracts NOs-48915 and Nos-54829 for fiscal years 1937 and 1938, respectively, in securing the return of metal drums from various Government activities.

"These contracts make provisions for the free-loan of the drums for a period of 90 days from date of delivery. In case the drums are not returned within the 90-day period, it is agreed that payment will be made immediately thereafter at prices stipulated in the contracts. Another provision is made for the return of the drums within a period of one year for credit at established rates. As Contract NOs-48915 expired on June 30,1937, it is quite obvious that there should be no outstanding accounts for payments due on drums delivered under that contract.

"It is obvious that all unexpected or unnecessary expenses in the performance of these contracts and failure of the Government to comply with its contractual obligations may react unfavorably in the submission of future bids.

"It is requested that all departments and establishments issue instructions accordingly."

Please make certain that you are not among the guilty persons in this connection--or at least that you do not remain among them!

ADMINISTRATIVE NOTES

Courtesy Cards for Gasoline and Oil Purchases. A recent memorandum from the Business Manager of the Bureau informs us that a representative of the Gulf Oil Corporation has stated that the Company is prepared to issue courtesy cards for use in making procurements of gasoline and oil for Government-owned automobiles in Alabama, Arkansas, Connecticut (East and West), Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland (East and West), Massachusetts, Michigan, Mississippi, New Hampshire, New Jersey (North and South), New York, North Carolina, North Dakota, Ohio, Pennsylvania (East and West), Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, West Virginia and Wisconsin.

Field officers desiring these courtesy cards should write to the Gulf Oil Corporation requesting the cards needed. When making the request, however, employees should indicate the State or States in which purchases will be made, and instruct the Company to issue cards bearing the names of the Department and the Bureau, together with the local address and U.S.D.A. tag number. Courtesy cards are not to be issued in the name of an employee, and payment of invoices billed to individuals will not be authorized.

The following is an example of a properly worded request:

"The Gulf Oil Corporation, 1515 Locust Street, Philadelphia, Pa. Gentlemen: It will be appreciated if you will furnish this office courtesy cards for use in making purchases of gasoline and lubricating oil in Louisiana. One card is desired for each Government-owned car here. These cars bear the following tag numbers: U. S. D. A. 2881 and U.S.D.A. 6242. The cards should be made out to the U. S. Department of Agriculture, Bureau of Plant Industry, 606 Court House Building, Shreveport, La., and one of the above noted U.S.D.A. tag numbers assigned to each card.

"Itemized invoices for all purchases should be sent direct to the address indicated on these cards and each purchase should show the U. S. D. A. tag number of the automobile into which material was delivered. Billing should be monthly and one Federal tax-exemption certificate will be issued to cover all purchases for such billing. Separate tax-exemption certificates for State will be issued to cover purchases made therein for the monthly period involved."

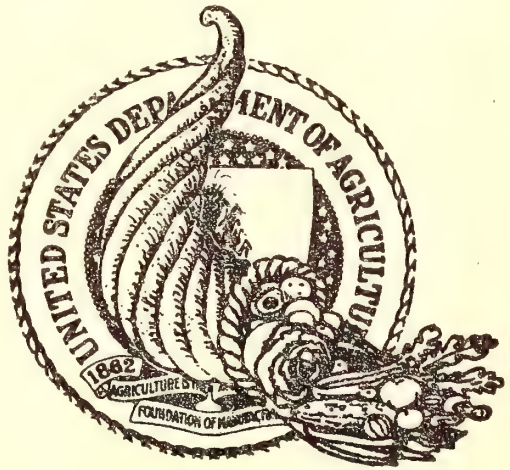
Roy Gillette will be glad to furnish any further information needed in connection with securing and using these cards--and he asks that for the love of Mike you take care in making request for cards, to fill in your own address and car numbers--as we don't want all of these courtesy cards sent to B. G. Sitton at Shreveport!

Vol. 10 No. 5 March 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X. Washington, D. C., March 15, 1937 No. 6

Vegetable Investigations

Writing from the U. S. Regional Vegetable Breeding Laboratory at Charleston, S. C., on March 1, Dr. Wade tells us something of the recent activities at the station. "Dr. Poole planted several strains of watermelons in the greenhouse last fall for crossing and has succeeded in growing a good crop of vines," he reports. "He was disappointed in the small amount of fruit set. Recently electric light, pruning, and greater intensity of sunlight have combined to give a satisfactory set of fruit which will give seed for late spring planting in the field. The crosses involved are mostly those for sugar content and size.

"Several crosses of beans involving blight resistant types with shipping varieties have been obtained. Tomato crosses have been falling off in most cases but brighter days will probably improve this condition.

"Mr. C. Fred Andrus, from the U. S. Horticultural Field Station at Beltsville, Md., has recently joined the organization here and will have charge of all the disease work. He now has under way work with the bacterial blights of beans, watermelon anthracnose and fusarium wilt, and fusarium wilt and leaf spotting diseases of tomatoes.

REGIONAL MEETING

"On January 17 and 18 a meeting of the collaborators with the U. S. Regional Vegetable Breeding Laboratory was held at Charleston. All of the 13 States had at least one representative present. Dr. Boswell came down from Beltsville for the meeting, and Mr. J. W. Wellington from the Office of Experiment Stations also attended.

U. S. REGIONAL VEGETABLE BREEDING LABORATORY

B. L. Wade (continued)

"South Carolina was represented by Mr. Musser, Dr. McGinty, Dr. Edmonds, Dr. Barnes and Mr. Jenkins; Virginia by Dr. H. H. Zimmerley; North Carolina by Prof. Schmidt; Tennessee by Dr. Brooks Drain; Kentucky by Dr. W. D. Valleau; Arkansas by Dr. V. H. Young; Oklahoma by Dr. H. B. Cordner; Texas by Dr. S. H. Yarnell; Louisiana by Dr. Julian C. Miller; Mississippi by L. R. Farish; Alabama by Dr. Keith Barrons; Georgia by Dr. H. L. Cochran; and Florida by Dr. F. S. Jamison.

"After a visit over the experimental farm and through the greenhouses and laboratories the meeting settled down to a discussion of regional vegetable breeding problems. Wade and Poole discussed what has been done with beans, tomatoes, watermelons, cabbage and maintenance stocks of recently introduced vegetables. The collaborators all explained what was being done in their various States on the various vegetable crops. It was agreed to add sweet corn to the list of four crops now receiving major attention at the Laboratory.

"The Laboratory is sending out to all of the 13 States a hardy strain of Marglobe tomato for further testing. In addition certain early strains of cauliflower, hardy cucumbers, and cold tolerant peas are to be distributed for breeding and further horticultural studies within the next year."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The week ending February 19th was spent largely in studies on the relative solubility and persistence of copper in the following spray preparations: Bordeaux 2-1/2-50 (high magnesium lime); bordeaux 2-1/2-50 (high calcium lime); bordeaux 2-1-50 (high magnesium lime); bordeaux 2-1-50 (high calcium lime); bordeaux 2-2-50 (high magnesium lime); bordeaux 2-2-50 (high calcium lime); bordeaux 2-1-50 (high calcium lime) + mineral spray oil, 1 pint to 100; bordeaux 2-1-50 (high calcium lime) + mineral spray oil, 1 pint to 100, and copper oxalate 1-50, respectively.

"These preparations were sprayed on previously weighed glass plates, the weight of the spray deposits thereon determined, after which they were placed in a moist chamber and a fine stream of water directed over the plates at intervals. The drip from the plates was caught in small bottles and at the end of the experiment the copper content of the water in each bottle will be quantitatively determined as will also the amount of copper still present in the deposits on the plates. This experiment is being carried on in cooperation with the Agricultural Chemistry Department of Oregon State College."

NUT INVESTIGATIONS

Paul W. Miller (continued)

He wrote on February 26th: "From all indications we are going to have an early spring in western Oregon. A large percentage of pistillate flowers of the Barcelona variety of filberts are now past bloom. In 1937 a comparable stage of development was not reached until about March 15. If the present springlike weather continues we will probably be applying our first spray treatment for the control of walnut bacteriosis sometime during the forepart or middle of April. In 1937 the first spray treatment for walnut blight control was not applied until early May."

Max B. Hardy, Albany, Ga.

"The Southeastern Pecan Growers' Association meetings were very poorly attended this year," he reports February 26th. "All the papers presented were met with appreciation, however, while one in particular was of outstanding interest. This was presented by the businessmanager of the Georgia, Florida, Alabama Peanut Growers' Association and dealt with a new idea in marketing. As usual, marketing was the topic demanding the general attention of those present and the paper seemed to be accepted as conveying a ray of hope in an otherwise dreary aspect. A movement was discussed at these meetings which would bring all the local growers' associations into one organization under the head of 'American Pecan Growers' Association," thereby making it possible to unify the efforts of the growers to improve the marketing situation. The next convention will be held at Monticello, Fla.

"During the summer of 1937 two or three trees at Philema were found to be so seriously infested with obscure scale that some of the limbs were dying. A careful survey of the surrounding trees showed that the scale was spreading quite rapidly and it was apparent that an effort had to be made toward control. For this purpose a total of 600 gallons of a 3 percent dormant oil emulsion were applied to trees showing infestation. This is the only instance that has come under any observation in this section of an infestation of obscure scale serious enough to make control measures necessary."

B. G. Sitton, Shreveport, La.

Writing from the U. S. Pecan Field Station on February 28th, he said: "Spring has apparently arrived, even though we do have occasional periods of cool weather. Most of the early flowering shrubs, including azalea and camelia japonica, are in full bloom. Flowering quince and forsythia have been in bloom for several weeks, as have most of the early bulb flowers. Maple, willow, oak and elm trees are beginning to bud out, but at the present time there is no evidence of budding of pecan trees. Pear trees bloomed several weeks ago and most of the peach trees are past the full bloom stage."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"There has been considerable interest in chestnuts as well as in other nuts," he reports February 12th. "The interest in nut growing seems to be increasing.

"In December and January we had foggy weather during practically all the time for several weeks. This has been followed by over two weeks of rainy weather during which time rain to a greater or lesser extent fell each day. On the 10th of February we were visited by a wind storm, or more properly speaking, a hurricane, which destroyed some thousand large elm trees in Sacramento and did considerable damage to roofs and walls of houses and other buildings. Most of the town was without heat and lights for a considerable time and traffic was almost at a standstill. Street car service was nil.

"The whole country is now surrounded by water and rivers are nearing the top of dikes. There has been a great deal of worry in regard to floods and prospective floods. It is reported that almond trees and other trees were uprooted in orchards north of Sacramento but it is not known as yet how extensive this damage is."

J. R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on February 19th he says: "Since the zinc sulphate has advanced in prices and the prices of pecans have been so low, growers are having difficulty in making up their minds about the use of zinc sulphate in controlling rosette this year. However, we are recommending a smaller amount of this zinc for the soil application and also advising the growers to use it more often because we do not know how much zinc sulphate can be used by the tree during the first season.

"During the season of 1937 there were several carloads of the zinc sulphate used in this vicinity and the growers would use about the same amount this season were it not for the approximately 1 cent per pound advance in price. Because of this advance we do not know just how much will be used. However, where growers are spraying for the control of scab, the zinc sulphate will be incorporated in the bordeaux mixture.

"Temperatures have remained unseasonably high and only a sprinkling of rain has fallen during the past week. Foliage of all kinds is making rapid growth and a severe freeze would be disastrous to farmers in this locality."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Blueberry pruning is proceeding rapidly and has been completed in many plantations," he writes from the Cranberry and Blueberry Disease Laboratory on February 15th.

"In one young field, in a weak row on the margin joining a woods, we found the bark near the crowns of numerous blueberry bushes to be covered with a saprophytic fungus of the Xylaria type. The bushes in this row have never made satisfactory growth, because of interference by the large pine trees on their south side. In order to stimulate growth the plants had received liberal applications of rotted 'turf' rich in organic debris, on which the saprophyte may well have been introduced. There was no indication that the fungus had penetrated growing tissues or further weakened the blueberry plants. The entomologists have found the blueberry bushes in many older fields to be quite generally infested with the Putnam scale, and are planning to make experimental applications of dormant sprays for the control of this insect."

H. F. Bergman, Amherst, Mass.

Writing from the Plant Disease Field Laboratory on February 19th, he reports:

"Some of the seeds of cranberry crosses planted late in January have germinated and grown sufficiently to be transplanted to a sand-peat mixture. About 750 seedlings from five crosses were transplanted during the week. Only two tubes were found to be infected with fungi. Seeds from rotten berries were sterilized with a 70 percent alcoholic solution of mercuric chloride."

John C. Dunegan, Fayetteville, Ark.

"A drop in temperature to 18°F. during the night of February 18, accompanied by snow, terminated the early spring weather of the past few weeks," he reported on February 19th.

"The apples and grapes are not believed to be injured by the sudden return of winter weather, but the prospects of a peach and plum crop has been materially reduced. In addition to the fruit crops, the sudden drop in temperature has caused severe damage to many ornamental plants throughout the section.

"The week ending February 19th has been one of almost constant rainfall throughout the State and the rivers have reached flood stage, causing considerable damage in the low lands..."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"A very interesting grower's meeting was attended February 17. This was in the form of a long-range planning meeting and discussions formulated new plans for orderly marketing of fruit that may have a decidedly interesting future in orchard work. We were called upon to discuss the fruit disease situation and to talk briefly on some of the research problems. Major interest centered around pear scab.

"Pear Scab. Last year's spray plots were examined briefly and twig pustules were found to be numerous in those receiving the less effective materials. Counts will be made soon to again determine the effect of sprays upon this phase of the disease. Even casual observations, however, showed that the twig pustules are much less frequent in the plots where better spray materials were applied. Twig scab was found to be all too abundant in the Dee district in orchards which received a fair spray schedule during the past season. It even appears to be possible that some of this infection may have originated after the regular spray schedule had been completed. Our data regarding late infections is very meager but we hope to follow this work more closely during the coming year. At the present time the disease gives promise of being very serious on the east side of the Lower Valley, possibly serious in the Dee section and probably with considerable increase in the Parkdale district."

John H. Weinberger, Fort Valley, Ga.

"Peach blossoms continued to open rapidly all week until yesterday," he reported February 21. "The minimum temperature yesterday and today was 32°F, so no injury to peaches is anticipated in this section. Reports from other peach growing sections north of here, Thomaston and Griffin particularly, are that blossoming is further advanced there than at Fort Valley. Here, Early Hiley in the Baird orchard is in full bloom at the present time. Other varieties range behind in direct relation to their cold requirement."

Leslie Pierce, Vincennes, Ind.

"Peach blossom buds are showing considerable development as a result of the warm weather which prevailed through February," he writes March 4th. "The buds are now swollen to about twice the size of dormant buds and are showing a considerable area of white color at the tips. In their present stage of advancement the buds would probably withstand a temperature of 15° above zero. The winter mortality of peach blossom buds in this immediate section still stands at 15 percent."

DECIDUOUS FRUIT INVESTIGATIONS

C. F. Kinman, Sacramento, Calif.

"Our longest period of consecutive days with rain was concluded last week and I was able to give two days to pear pruning at Marysville and root growth studies at Chico," he writes to Dr. Cullinan under date of February 21. "Due to continuous mild winter weather with only rare light frosts, root extension has been continuous throughout the winter.

"While the recent storm injured many orchards, the damage appears to decrease as one goes northward from Sacramento until at Chico only occasional trees were blown over. Olive orchards appear to have suffered most, although many weak and exposed trees of other orchards were blown down. In one large cherry orchard where Morello rootstocks were used, practically all trees are leaning badly due to the wind. The common commercial cherry varieties over grow this stock rather badly. Aside from damage to orchards, many large oaks and other trees were uprooted.

"The City of Sacramento suffered most in its loss of hundreds of old elms. You will recall these large beautiful trees. In the vicinity of our office I measured two large specimens. At about 4 feet from the ground one was 35-3/4 inches in diameter, exclusive of the bark, and the other 38 inches. Growth rings indicate that they were 54 and 51 years of age, respectively. The first was 86 feet tall. These trees were somewhat favored in their location, although I did not search for the largest ones. Many that were blown over were considerably smaller than the ones measured."

Elmer Snyder, Fresno, Calif.

Grape Seedlings.--Writing from the U. S. Horticultural Field Station on February 15th he says: "Grape seeds, which were planted in flats in early December, kept moist and cool until January 10, were transferred to the heated greenhouse. Temperatures in the greenhouse were maintained, as nearly as possible, at 60°F. at night and at 80° during the day. The first appearance of cotyledons above ground was noted in 14 days at a computed mean temperature of 73.4°. From one to two true leaves were formed during the next 18 days at a mean temperature of 71.6°. The larger seedlings are being transplanted to propagating pots. More than 2,000 seedlings are already growing, with more in prospect.

"The grape seeds were treated with cuprous oxide dust previous to planting in flats and the flats were sprinkled when the seeds were germinating with cuprous oxide in water, constant agitation necessary. Less than 1 percent 'damping-off' was observed."

DECIDUOUS FRUIT INVESTIGATIONS

Claron O. Hesse, Davis, Calif.

"The blossoming season will again be late this year," he writes February 23, "largely because of the long rain, which held the trees back for nearly three weeks. "Apparently, until that time all signs indicated an early season. The almonds were most markedly delayed, because they are normally the earliest blooming. Harriet, and some of the almond seedlings are the only varieties to show an appreciable bloom to date. P. mume, and one or two of the early P. dasycarpa are the only apricots which have bloomed to date. We are expecting the general blossom period to coincide closely with the date of last year--about the fourth or fifth of March."

Geo. F. Waldo, Corvallis, Oreg.

"Reports have been received from Multnomah county that the red raspberries have been very severely injured," he writes February 26th. "Due to the mild weather, the Cuthbert red raspberry did not become dormant and cold weather occurring in the early part of February, with temperatures down as low as 20°F., have severely injured the red raspberries in this section. Reports have also been received of severe injury to red raspberries in the State of Washington, especially in the Puyallup Valley."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS

W. T. Pentzer, Fresno, Calif.

"February brought to a close one of the best grape storage seasons that we have seen since 1929. The fall was dry, not enough rain falling during harvest to wet the grapes and start mold infections. The result was a storage season remarkably free from mold. Our storage lots held well for three months compared to about 1-1/2 months in 1936, a season with a wet fall. Most growers and shippers realized good profits by storing, the market price doubling in some cases during the storage period.

"Among pear growers the question of pear maturity is still a live one. In the vegetable districts, much interest was evidenced in decay problems that have appeared in some cases with the advent of water cooling. Rainfall in February was unusually heavy, bringing the season's total over the normal mark and approaching last year's record. Almonds and early plums are blooming and a few apricot blossoms are showing in some orchards."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

C. O. Bratley, New York, N. Y.

Writing on February 23d, he sends the following interesting notes from the New York City market: "The Red Bliss new potato crop from South Florida has been arriving in New York City in the best condition that has ever been seen here with potatoes from that section. Two years ago slimy soft rot took a very high toll and last year there was considerable of this decay. In no lots examined this year has this decay been found except on an occasional potato. As usual 'skinning' has been very common but this is due to the fact that the potatoes are dug and handled while the skin is very tender. The receivers here say that it is not necessary to give drying or precooling treatments to the potatoes this year because the soil in which they are grown has remained fairly dry during the latter part of the season.

"A test shipment of potatoes in cartons was made by the National Container Association in early February. These cartons held 15 pounds of potatoes and were ventilated at the ends with 6 small oval shaped holes. Mr. Winston was in Goulds when the potatoes were packed and wrote that they were still wet when placed in the cartons. The shipment was made by ventilated rail. On arrival here the potatoes were in excellent condition but the demand for the carton was very poor. The cartons sold for an average of 40 cents while the standard 50 pound bushel crate sold for an average of $1.45. The jobbers here felt that a 15-pound carton contained too many potatoes for the average consumer and too few for the retailer. The Container Association is now considering a carton to hold 12 3-pound mesh bags of new potatoes and expects to run shipping tests with these in March. On the night of arrival of the car of potatoes, a car of Florida green beans in bushel cartons was unloaded. These well ventilated cartons barely outsold the regular hamper. The beans were in excellent condition.

"Last year the new potatoes market was exceptionally good. During January and February an average of about $2.00 per crate was received on the New York market. The deal was so profitable that a greatly increased acreage was planted. The prices this season have been very disappointing. The average price on this market for January was about $1.90, but on receipt of the bulk of the crop in early February prices dropped to $1.35 at which point they remained. Since the average cost of production and packing is said to be over $1.00 per bushel and charges by rail and steamship are 50 and 40 cents, respectively, it can be seen that the present selling price is not profitable...."About the 1st of February we looked at a carlot of new potatoes from Texas. About 5 percent of the tubers were affected with very early stages of late blight. It was barely visible from the surface but upon scraping or cutting was seen to affect a very shallow strip of flesh, turning it brown in a feathery pattern."

ADMINISTRATIVE NOTES

Telegrams A steward stood at the gangway of a ship and kept shouting, for the benefit of the arriving passengers, "First Class to the right! Second Class to the left!" A young woman with a baby in her arms stepped aboard. As she hesitated before the steward he bent over her and asked politely: "First or Second?" The girl blushed furiously. "Oh," she said; "Oh, dear--it--it isn't mine."

What we mean is that it isn't theirs: When you receive a telegram concluding with the words "Wire by Western Union" or "Wire by Postal Telegraph" it is quite likely that these words have been added by the telegraph companies, not by the senders of the telegrams. A memorandum from the Office of Budget and Finance of the Department--No. 65, dated February 17th--says:

> "The records indicate that the Bureaus of the Department are receiving an appreciable number of telegrams, originating with private individuals, corporations, etc., and containing requests for information, which conclude with either "Wire by Western Union" or "Wire by Postal Telegraph."
>
> "In this connection it appears that the concluding sentences heretofore mentioned are placed in the telegrams by the respective companies with or without the knowledge or consent of the sender, but that in no instance was the sender charged with the additional words. It further appears that in some instances it has been the practice to reply to such telegrams with telegrams sent at Government expense. Such a procedure represents an improper use of public funds.
>
> "Hereafter, any telegram which originated with an individual, corporation, etc., and contains a request for information should be answered by letter, unless the telegram to which reply is being made includes a request, such as 'Reply by Western Union Collect', or the desire of the sender to receive a reply by telegram may be deduced from the contents of such telegram. In both instances the reply shall be sent at commercial rates--collect.
>
> "This circular does not supplement any specific provision of the Regulations of the Department, but the requirements of regulations 1681, 1682, and 1684 should be considered."

Yes, sir, that's your baby! Make sure that requests of this sort actually require a reply by telegraph; and if they do, remember that the reply goes collect--at commercial rates--not at the expense of Uncle Sam.

ADMINISTRATIVE NOTES

Purchases and Service — Heads of field stations will recall that about December 1 they were requested by their section leaders to send to the Washington office at the end of December, January and February, reports listing the purchases made and services furnished during each of these months.

A recent memorandum from the Office of Budget and Finance of the Department requests that these monthly reports be continued, at least until the end of the present fiscal year--June 30, 1938. It will not be necessary for the field men to continue these reports after February, however, as plans have been worked out whereby the Business Office will prepare them in future. However, in order to assist the Business Office in preparing these reports it is requested that all vouchers be forwarded promptly at all times, but especially at the end of each month, as they should reach Washington, if possible, before the fifth of the succeeding month.

The reports on purchases of gasoline should be continued.

NO, NO! TEN THOUSAND TIMES NO!

No free Seeds. — The newly married, beautiful-but-dumb young thing rushed into the house in great anguish. "Oh, Hector!" she wailed to her husband,"I've just been bitten by a dog." The husband patted her on the shoulder sympathetically as he looked at the slightly scratched finger."There, there, darling--don't worry. Just go and put some peroxide on it." "But--but I can't," she sobbed."It--it ran away."

Yep, the Department has been trying to catch that free-seed dog for years, to sprinkle a little peroxide on its tail. No use--we can't seem to catch up with it. For 15 years the Department has been trying to convince people that it has no free seeds or plants. Yet each year, as spring approaches, thousands of requests pour in from farms, suburbs, and penthouse, says a Release from the Press Service.

"Years ago--previous to 1923--there was an annual appropriation for free seeds for Congressional distribution through the Department of Agriculture. But in 1923 the Government decided to discontinue the distribution of this great quantity of seed since it was only commercial garden seed such as could be bought from any good seed house and did not necessarily represent varieties better than those in common use.

"Not only does the Department now have no free seed; it has no seeds or plants for sale either."

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., April 1, 1938 No. 7

Filberts Our colleague, C. A. Reed, has turned up a very interesting piece of information in connection with his filbert studies at Beltsville and Arlington Farm. "While the direct results of the season's filbert crossing are not going to be all that was hoped for," he writes March 16th, "a chance discovery has been made that alone may prove worth an entire season's work--that catkins on the tree can be preserved against cold injury when conditions are no more severe than they have been at Beltsville this year by merely enclosing within a cover of cellophane.

"This discovery came about as a result of covering a small number of catkins within such cases with a number of pistillate flowers in order to determine the self-sterility or self-fertility of the particular varieties. The work was mainly on Rush and Littlepage varieties of the American hazel, Corylus americana, but a few catkins were similarly covered on a Cosford tree standing conveniently near. In every case where this was done the catkins came through in perfect condition. If all the pollen discharged from catkins so protected could have been used, there would have been enough for ten thousand trees!

"It is apparently possible by this method to cover a few clusters of catkins in central parts of the trees used as pollinizers and to provide a liberal abundance of pollen at the time it is needed over a whole orchard. It is also apparent that when temperatures and winds are no more trying than they have been at Beltsville, the slight protection afforded by cellophane covers is all that is necessary. However, when the principle is tried on a more comprehensive scale it is probable that considerable thought may well be given to the matter of material for covers as the kind used in this case became brittle and broke open badly during cold spells, especially when the wind was high. It is probable also that unless considerably more durable material is used the casings should not be cut into lengths of more than 10 or 15 inches.

"Prospects of a good crop of filberts at Beltsville and Arlington Farm are better than usual. The moderate temperatures of the entire winter previous to the first of February left the staminate flowers with an unusually slight amount of winter injury. Pistillate flowers of the filbert, of course, are seldom damaged by cold weather except while actually in flower, unless the wood is killed. Most varieties of the European filbert were well past their usual midseason development by the end of February. Barcelona, the earliest in this respect, in keeping with its usual custom, began to put forth its first staminate and pistillate blossoms during warm hours of sunshine soon after December first, and was practically through by the end of January. Other European varieties responded quickly to temperatures above 35°F. that occurred on all but three days between February 1 and March 6.

"Compared with conditions a year ago, the filbert situation becomes doubly interesting. Warm days of January 1937 when minimum temperatures dropped no lower than 35° caused the filberts of all classes to burst into full flower before the end of the month. The classes represented at Beltsville and Arlington Farm include the English and Mediterranean varieties, which are earliest; the German varieties, which follow closely; the American x European hybrids, which are intermediate; and the pure American sorts, which are latest. The January temperatures were followed very early in February by a sudden drop to 15° that recurred only on two or three nights but which all but destroyed the prospects of a crop. The filberts had been caught exactly midseason. A few days later the tops of many trees appeared to have been killed. It did not then seem that a crop of nuts was at all possible. Gradually, however, life began to reappear and presently it became evident that not all catkins had been entirely killed and that the injury to the tops had been much less than was at first apparent. A little later the pistillates began to appear and while they were no doubt considerably weakened as a result of injury to the wood nearly every tree bore a few nuts.

"This year the winter has been unusually open but until the first of February temperatures were low enough to hold most of the varieties back with the exception of Barcelona and a few others. The number of catkins was generally great. By mid-February the catkins of even the latest sorts were beginning to lengthen and otherwise to show signs of early activity. By February 25 the European varieties were practically all past the height of the season. Some were entirely through. Here and there a young tree or one which for some reason had been held back, was still at mid-season flowering. Cosford, for example, was in full flower on that day. Many of the earliest hybrids were approaching mid-season flowering."

The sort of weather prevailing in early March, with considerable wind as well as rain, seriously interfered with the pollination work that had been planned in connection with making F2 crosses with the most promising of the hybrid selection. Barcelona and DuChilley catkins from Geneva proved have been killed by previous low temperatures, but a small number of much desired crosses were made, mostly with pollen sent us by Schuster from Oregon.

SUBTROPICAL FRUIT PRODUCTION

D. C. Moore, Indio, Calif. (U. S. Date Garden)

"In contrast to the previous winter, the winter of 1937-38 in the Coachella Valley has been the mildest since 1908, with only 2 days at 32°F. or below. The average mean temperature for November, December and January is 4 degrees above the normal for 60 years. This relatively warm winter weather has not had any apparent effect upon date palms, but has caused such truck crops in the Valley as tomatoes, beans and squash to be 10 to 14 days earlier than usual. The warm weather has also apparently caused grapefruit to make new growth.

"The mean temperature for February is 56.9°, or 2.3° below normal. The new growth of grapefruit has turned from green to yellow, apparently as a result of the cooler nights in February. Rainfall of .70 inch in February brings the total since July 1 to 1.13 inches. Recent rains have caused the date leaves, injured by the cold of January 1937, to show an ocher red rather than a brown discoloration. This more vivid coloration emphasizes the rather large extent of the remaining leaves that are injured. With so much of the 1937 leaf area injured, it is not surprising that the 1937 date crop was characterized by small, more or less shriveled fruit.

"With suggestions from Dr. J. R. Furr, determination of the wilting point of the soil from irrigation plots at the Date Garden has just been completed. Considerable difficulty was experienced because at the time the wilting began the plant showed brown spots on the leaves. This was possibly due to an excess of salts in the soil. The results showed the wilting point to vary from 6.7 to 9.2 percent in the top three feet, with 3.5 percent in the fourth, 2.3 in the fifth, and 2.0 in the sixth."

C. L. Crawford, Indio, Calif. (U. S. Date Garden)

Under date of March 9th he writes: "The pollination season has started and with it the annual quest for rooms in which to store several different kinds of pollen without suffering the displeasure of hay fever victims. Pollen has been collected from Sylvestris No. 1, a seedling male of Phoenix sylvestris that has been blooming for over a month, and from a young palm of Fard No. 4, an early-blooming male of P. dactylifera. The old Fard No. 4 by the driveway of the U.S.Date Garden produced several blooms some three or four weeks ago and appeared to have finished for the season. However, other blooms are coming along now, and some of them have been bagged. No spathes have opened on the Mosque male as yet, but several have been bagged and plenty of pollen should be available for the new experimental work (on Deglet Noor) at the Martinez Indian Reservation where pollination of some of the earlier date varieties is already well under way.

SUBTROPICAL FRUIT PRODUCTION

C. L. Crawford (continued)

"I have just completed compiling some preliminary data on the concentration of date palm roots from soil-tube cores taken at 1-foot depths down to 10 feet at various distances from the trunk of a 14-year-old Deglet Noor date palm. A 2-foot strip, extending southward from the center of the palm was marked into six 2-foot intervals and from each interval soil cores were removed with the soil tube. All roots 2 mm or less in diameter from each foot of depth of each hole were separated from the soil, washed and weighed. Averages of these data showed 25 percent of the roots were 2 to 4 feet from the center of the palm. With the exception of the second space, which contained 12.5 percent of all roots, the spaces farther from the palm showed progressively less roots, with 11 percent in the last space, 12 to 14 feet from the trunk.

"Vertically, only 2 percent of the total roots were found in the top foot, but 66.4 percent were in the first 4 feet, and 98 percent in the top 6 feet."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

N. H. Loomis, small fruit investigations.

"Prospects for this year's strawberry crop are bright," he writes March 12th. "Blossoming was delayed until about March 1, so that little loss has resulted from frosts although that is still a possibility. The first ripe berries for the Meridian section were reported March 12, but it will be 2 to 3 weeks before there are many on the market. The acreage here has been materially increased over that of the past few years. Cold weather in February killed open strawberry blossoms, but was not severe enough to kill partially developed strawberry fruits."

He had written February 19th: "Continued warm weather has brought 75 percent of the peach trees in this section into full bloom and probably 90 percent of the pear trees are either in bloom or have already bloomed. Growth has even started on a few varieties of 'bunch grapes' and also on some muscadine grapes; even the buds of fig trees are swollen. A few of the very early varieties of strawberries are blossoming. Fortunately the commercial varieties of this section are not blossoming much as yet. The station planting of strawberries was heavily mulched with pine straw early in December, and this may be retarding the blossoms somewhat in this planting. The week-end has been cold, but not yet cold enough to kill the fruit blossoms; however, more freezing weather is inevitable and serious injury to the peach and pear crop is to be expected."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman, vegetable crop investigations.

"Tomato planting is 10 days to 2 weeks earlier this year in the Crystal Springs section than during the past year," he writes March 19th. "The bulk of the acreage, which is apparently about the same as that of last year, has already gone to the field. Generally speaking, plants have grown too fast and where careful grading has not been done, weak plants together with unfavorable weather will necessitate a high percentage of replacements. Supreme Gulf State Market is apparently being more generally grown this year than was the case last year and we are hearing more of the value of the Master Marglobe variety. The latter seems to be a bit later than the former but is said to bring a price of 10 to 25 cents more per lug.

"Cabbage are irregular in size, generally badly infested with plant lice. Peas are much advanced in size, in near full bloom, but are extremely poor in color and probably more heavily infested with green plant lice than has been the case during the past several years. Here and there a small patch of beans is just coming out of the ground. Farmers are generally much encouraged over the cabbage outlook and feel almost as good over the tomato outlook, but are rather discouraged because of aphid infestation on the peas. It is thought that this heavy infestation has followed unusually heavy planting of Austrian winter peas."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Mr. R. H. Robinson, chemist at Oregon State College, has completed the analyses of drop water from plates sprayed with copper oxalate 1-50 and bordeaux mixtures containing various copper-lime ratios with and without oil, respectively. He reports that soluble copper was only found in the drip water from the plates sprayed with copper oxalate 1-50. No soluble copper was found in the drip water from the plates sprayed with any of the bordeaux mixtures. The result of this preliminary study may possibly explain why copper oxalate gave better control of walnut blight than bordeaux mixture in certain localities where blight infection was particularly severe. It would seem reasonable to suppose that the greater the amount of soluble copper present on the trees during an infection (rain) period the greater would be the protection afforded the host from infection by the walnut blight pathogen. Results of this preliminary experiment also indicate that the action of carbon dioxide and moisture on the bordeaux mixture residues will not by themselves bring much, if any, copper into solution. Apparently secretions of the living host plant and of the pathogen under the influence of environmental factors, as temperature and moisture, are of vital importance in bringing the copper into solution."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Almonds are in full bloom now and so far as can be seen at the present time the spread of the blooming dates is somewhat longer than as the case last year," he writes under date of March 12th. "However, the cold rainy weather held back the early varieties. Such early varieties as the Harriott and many of the early blooming hybrids in the breeding tract bloomed quite closely to the medium-late blooming varieties.

"Some attention was given to wind damage to almond orchards north of Sacramento. While the wind damage will not reduce the total acreage of almonds or the almond production to any marked extent, there seems to be more trees blown down than I expected. The damage consists largely of the bending over of the trees and in the pulling out of the roots on one side of the tree. Most of the trees are hanging by the tap root and by some of the roots opposite the windy side. These trees are for the most part lying prone on the ground. In some orchards over half the trees have been tipped over in this manner or torn out. It is a question as to whether it will pay the growers to raise these trees and replant them, or whether it is better to start a new orchard."

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on March 5th, he says:

"The weather during the week was generally clear and warm. No rainfall was received. Since December 1, 1937, to the present time we have recorded 4.56 inches of rainfall, while during the same period a year ago we recorded 15.17 inches. It is easy to see, then, why we are beginning to worry about our moisture conditions and wondering what our prospects will be.

"It is true that, so far, cover crops and all other growing plants are looking fine. The spring is exceptionally early and, even though pecan trees are usually not 'fooled' into too early a start, I have seen rather generally a swelling of buds on most trees and on young and vigorous trees I have seen leaves fully separated. In fact, one of the trees in the old seedling orchard is so far advanced that it has a distinct greenish cast."

He wrote March 12th: "Some winter injury is becoming apparent particularly on topworked pecans and on some shrubbery. It appears now that we will lose through cold injury four crape myrtle shrubs planted here at the laboratory. The injury can be accounted for on more vigorous or more susceptible plants by the low temperatures occurring early last fall while the plants were still alive."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"The weather has been very nice for the last two weeks, with practically no rain," he reports March 12th. "In fact it is so nice that it appears that fruit is pushing out very rapidly. The earliest of the walnuts are now shedding bud scales and catkins are elongating. In attempting to inject boron into some walnut trees, bleeding was so heavy that the hole filled up before we could get the boron in.

"Pruning work on filberts which has been under way for a couple of years shows very interesting results. The old wood that has become devitalized is very difficult to stimulate into increased growth. It appears more and more that pruning of filberts is going to swing towards the modified peach pruning--that is, on orchards where the trees are old and the soil is not capable of maintaining increased regular growth indefinitely, as do our better, richer soils."

J. R. Cole, Albany, Ga.

"It now appears that the season is at least two and perhaps three weeks ahead of last year," he writes from the U. S. Pecan Disease Field Laboratory on March 12th. "Of course, cold weather could and might come to check the growth but the trees are far advanced for this time of the year, much further than usual in face....

"We continue in perhaps the most severe drought that we have had here at this time of year in a long time. In fact it will probably establish a record unless we get some rain in a short time. We have had exactly one third the amount of rainfall this year from the 1st of December, 1937 up to now that we had the previous year, that is from the 1st of December, 1936 to March 1, 1937. Mr. R. D. Lewis, Soil Technologist here at our laboratory, reports that the soils where his experiments are located have now reached the wilting point and as yet there is no apparent sign of rain. The growers that have cover crops planned in their orchards are turning them under but they are doing a very poor job because the ground is too hard to turn these cover crops under."

However, he wrote on March 19th: "We were favored with the best rain that we have had in several months on March 16, a total of 1.6 inches having been recorded in the Taylor orchard, and this rain fell over a period of about six hours. The temperatures have been about normal and vegetation is making very rapid growth."

NUT INVESTIGATIONS

F. N. Dodge, Robsen, La.

"During the week several varieties of pecans have shown signs of making new growth, and catkins have been found on Schley and Nelson," he wrote from the U. S. Pecan Field Station on March 7th.

"The rye in our rye plots is showing indications of nitrogen deficiency. Available soil nitrates have been low in those plots since the heavy rye crop was turned under a year ago. Now, there is an area about 15 to 18 feet from the tree trunk on which the rye is only a few inches high, while it is about 2 feet high outside of this area. Some rye was planted on ground that had had a winter legume the previous winter, and this rye is higher, and greener, than the best rye in the rye plots."

On March 14th he reported: "New growth on most pecan varieties on the station has progressed considerably this week, with Stuart and Success being the only varieties of southern pecans that have not broken their bud-scales.

"Austrian winter peas are being seriously infested with aphids, and there are areas where the peas are dying from disease infection. Our best cover crop at present is the Melilotus indica which is 2 feet high over much of the Variety Orchard."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

There seems to be quite a lot of activity at the Cheyenne station these days--or should I say, as usual. Anyway--

"Various plants were being harvested in the greenhouse during the week and new plantings were in progress," Dr. Hildreth writes March 19th. "Dr. Powers harvested muskmelons and tomatoes and Dr. Benedict was harvesting western wheat grass. Ornamental seed was being planted in the greenhouse flats, and Babb abd Kraus were planting vegetable seed, including tomatoes, eggplants, cabbage, onion, celery, cauliflower and broccoli."

Spring plowing started the latter part of the week ending March 12, as the frost had gone out of much of the field land then. A night shift operated one night and two of the men worked Saturday afternoon getting the land in shape for planting.

Raspberry hybrids were planted the middle of February in flats in the greenhouse and conifers transplanted to greenhouse tanks from the nursery. Grape seed were planted in cold frames. The third rabbit drive of the winter took place February 18, but only 25 rabbits could be collected for repellent-solution enclosure.

DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Brownwood, Tex.

"Early blooming peach varieties are in full bloom," he wrote to Dr. Magness on March 5th. "Local nurserymen tell us that there will be very slight chance for a peach crop here this year, as the blooming season is so early that subsequent frosts and freezes in March almost certainly will kill the blooms or young fruits.

"Pending completion of an office building we are occupying temporarily a room at 204 Fish Street, and have rented Post Office Box No. 299, where we will receive official mail. To differentiate our group from the group at the Pecan Field Station (Nut Investigations), we are listing our activities in the directory under 'Deciduous Fruit Investigations, Bureau of Plant Industry, U. S. Department of Agriculture.'.. Mr. and Mrs. Rue arrived on February 25th."

Elmer Snyder, Fresno, Calif.

"Our excessive rainfall has been the general topic of interest in the Fresno section," he comments in his report of March 12th. "Seasonal rainfall in the Fresno section totaled 15.14 inches on March 12th. To sections that have real rains this does not mean very much but to this section it means much water when it is considered that the above total exceeds our normal yearly average by more than 6 inches with still a month to go when we can expect some rainfall. The present season however has been very favorable to our Melilotus indica cover crop. The abundant water supply plus a mild winter has promoted a continuous growth so that at present the Melilotus ranges from 1 to 2 feet in height. Fenugreek also seeded at the same time has not made as much growth and has apparently not been able to stand cold or excessive water as well as the Melilotus. Constant rains in the Oakville section have delayed pruning operations but have been favorable to natural weed growth. In the Napa valley, hundreds of acres of solid vineyard plantings were a mass of yellow blossoms of mustard, completely hiding the spur pruned wine varieties.

"The first transplanting of grape seedlings was completed during the week of March 12th. A grand total of 3,387 grape seedlings was transferred from flats to small transplanting pots. These seedlings represent 12 selfed vinifera varieties, and 48 crosses, mostly vinifera by vinifera, but also including vinifera x rotundifolia, and vinifera by Bourquiniana. Efforts during the last season were concentrated on the production of more seedless grapes, earlier and later ripening table types, and combining production with quality in wine types. At the present time some of our most vigorous seedlings have vinifera by bourquiniana parentage."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Examination of strains of Delicious apples showed that in 1937 Richared and Starking acquired satisfactory maturity for harvesting at approximately the same time as Delicious," he writes March 9th. "Results of the studies on time period between full bloom and maturity for harvesting indicate that this may be a useful guide in picking red strains even though seasonal and sectional variations probably may occur. The release of Richared and Starking apples from the spur as well as the ground color of Delicious apples from adjacent trees were more unreliable maturity indexes during 1937 than a minimum period of 145 days between full bloom and harvest would have been.

"The use of 14-, 16-, and 18-pound oiled wraps did not control storage scald on immature Delicious. It was striking that immature Delicious picked and stored in Yakima had very little storage scald contrasted to the pronounced storage scald observed on Delicious apples picked and stored in Wenatchee. Even though the fruit was wrapped it is probable that the fan in the Yakima storage room accounts for some of this difference.

"The apple varieties examined to date indicate that cellophane wraps are not safe. Results with Jonathan were satisfactory but Golden Delicious were subject to surface molds and to lentical injury, while Stayman Winesap and immature Delicious scaled badly when wrapped in cellophane at harvest time.....

"The winter is drawing to a close without having had any severely cold weather. A series of wet snowfalls kept the ground covered with snow until the first week in March. A few degrees difference in temperature caused most of this moisture to fall as rain in the Yakima district. Although February and early March temperatures have been very much higher than normal, this may not influence the earliness of the spring as much as might be expected because of the great number of cloudy days. However, as tulips are pushing through the ground the general impression is had that we are experiencing an 'early spring.'

"Apple supplies and values are causing the acute depression to continue, and lack of finances has held up the usual orchard work. It is difficult to forecast just how much production will be reduced through these circumstances. Many submarginal orchards probably will be taken out of production..."

ADMINISTRATIVE NOTES

Lists of Employees — A note from the Office of the Secretary calls attention to the rather frequent requests from members of Congress for lists of employees. In order that such requests may be handled in a uniform manner they must be referred to the department Office of Personnel. Therefore be sure that all Congressional requests for such lists are sent to the Business Office for proper handling.

ADMINISTRATIVE NOTES

Automobile Equipment — A decision by the Acting Comptroller General, dated February 14, 1938, requires that in every case where a purchase is made of additional or auxiliary equipment for a passenger carrying vehicle the voucher for such equipment must be accompanied by a statement in detail showing the original cost of the car, with an itemization of any equipment installed since its purchase.

Such equipment might include automobile heaters, additional mirrors, bumperettes, etc. If you have purchased and installed, such things since the delivery of your passenger-carrying cars, it seems advisable that the Business Office be notified promptly, and be furnished with a list of such items, with cost, if these data are available; if not, supply the name of the dealer and the approximate date of purchase. In this manner the Business Office will be able to furnish the statement on any subsequent purchases of equipment for passenger-carrying cars.

The law passed May 14, 1935, requires that in no case shall the cost of a passenger-carrying vehicle exceed $750, completely equipped for operation, and the Comptroller General's decision interpretes this latter clause to include any subsequent purchases made for additional equipment on such vehicles. If the amount shall at any time exceed $750, the individual making such purchase will be required to pay the excess amount from his personal funds, as the account will be disallowed by the General Accounting Office!

Marking Automobiles — Attention is called to Par. 1834 of the Regulations governing the marking of vehicles: "Trucks shall be marked on both sides, in suitable colors, as follows: By a union shield with the same lettering as applied to passenger cars except that the shield shall be not less than 10 x 10 inches in size." It is apparent that this regulation is not being generally observed, as trucks marked with small letters in 5x5 shield have been seen in operation. Employees are requested to make sure that their motor trucks are marked in accordance with the Regulations. In ordering decalcomanias for doors of official vehicles, remember then that trucks MUST bear the larger shield. The small shields are for use only with passenger-carrying cars.

Vouchers — Rather frequently the Business Office has been receiving vouchers from various firms, addressed to the Bureau of Plant Industry, Washington, D. C., while covering purchases made in the field. This, of course, delays settlement of the accounts. While this sort of thing is apt to happen now and then, perhaps if the person placing the order would emphasize the need for returning the voucher to him rather than to the Washington office, the practice would be reduced to the minimum.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Team Play

The news letter or "house organ" has become an important feature of the general program of most large business organizations because it offers such an excellent medium for building up team play among the employees. It gives each worker some general idea of what his associates are doing, and it helps to make clear to him the general objectives toward which all of the work of the organization is directed. Too, through its publication of reports of workers, it offers a means for the effective exchange of opinions and information.

Just what team play may mean is strikingly shown in the success of the new Mildew Resistant Cantaloup No. 45, a cooperative achievement. The work goes back to 1926 when we teamed up with the California Agricultural Experiment Station in the attempt to save the cantaloup industry of the Imperial Valley from destruction by powdery mildew. The climax came when, after the new resistant variety had been secured by the plant breeders, the workers of our section of handling, transportation and storage and market disease investigations stepped in to demonstrate that No. 45 could be allowed to reach full maturity on the vine and then by proper precooling and transit refrigeration be shipped to New York City and remain in good marketable condition long enough for all trade demands.

Thus it is no accident that eastern consumers are getting the best cantaloups they ever received from the Pacific Coast. The matter, too, has a phase of importance far greater than might be guessed at first because prior to the creation of No. 45 the varieties being grown had to be picked half-ripe in order to make the long trip East and so frequently arrived in such poor condition that consumers were beginning to believe they could no longer get a good melon from California. When the cantaloup crop begins to move about May 1, more than 90 percent of the melons from the Imperial Valley of California and the Salt River Valley of Arizona, areas normally producing more than half the commercial crop, will be of the new No. 45. The rescue squad has done its work!

NUT INVESTIGATIONS

Milo. N. Wood, Sacramento, Calif.

"We are finding considerable variation in the date of bloom of the 8-31 and 8-32 hybrids, according to districts," he writes concerning the almond hybrids, March 19th.

"As a rule the 8-32 seems to bloom along with the Ne Plus Ultra commercial variety. The information obtained this year substantiates the data previously collected in regard to the relation of the blooming of 8-31 and 8-32 to the blooming dates of the leading commercial varieties. It is positive that the 8-32 and Ne Plus Ultra varieties will pollinate each other successfully in all commercial orchards in all districts. Furthermore, the 8-32 in some years in some sections will interpollinate Nonpareil and more often will interpollinate the Peerless. It is believed, however, that it is not safe to recommend the planting of the 8-32 and the Nonpareil in all districts for all seasons.

"The profuse blooming of 8-32, according to data collected for several year, seems to be characteristic of the variety. It also appears that in some districts the 8-32 makes better growth than 8-31.

"Blooming data shows that the 8-31 blooms a few days after 8-32 and is more straggling in its blooming habit. Usually the 8-31 blooming period lapped into the Nonpareil bloom to quite an extent. This variety also interpollinates with Ne Plus Ultra very satisfactorily."

F. N. Dodge, Robson, La.

"Growth on the pecans is progressing rapidly," he reports March 28. "Catkins can be easily seen on all southern varieties, and pistillate blossoms can be seen on 15 varieties. The development of the pistillate blossoms on the Schley trees in cultivated areas is pretty well along and it is apparent that the bloom will be heavy."

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on March 26th he reports: "Pecan trees are making very rapid growth and we expect to be able to obtain ripe pollen from some of the earlier varieties by the end of the week.

"Out of the 275 chestnut trees planted in the orchard this spring only one appears now to be likely to die. This is a grafter tree which was girdled by the waxed cloth. Most of the young trees are making a very strong growth. Observations made on the seedling chestnut trees grafted and budded about three weeks ago show that not one of the shield buds is living but that most of the whip grafts are still alive and some are making good growth. We are planning to do more of this work at intervals in the hope of learning the best means of propagating chestnuts."

NUT INVESTIGATIONS

Max B. Hardy (continued)

Writing on April 2, he says: "While on the trip to Monticello, Fla. in company with Mr. Cole, I visited the Chase Tung orchard at Lamond, Fla. This is a planting of tung trees which is being increased each year and which now has at least 2,000 acres in production. It is the first tung orchard that I have ever seen that makes me think the industry may have some possibilities. Every tree I saw had a heavy crop and I was told that the orchard produced a good crop last year. A good crop of tung nuts is to be expected all over this section this year as every tree I have seen has had either a full crop or bloom or young nuts."

Tung Trees

J. R. Cole, Albany, Ga.

In a letter of the same date, J. R. Cole adds that the foreman in charge of the Chase orchard told him that they are contemplating the planting of several thousand more acres in tung trees. "One interesting point about this planting," he adds, "is that there was no sign of winter injury and trees were in a vigorous growing condition.

"The temperature at Albany, Ga. (U.S. Pecan Disease Field Laboratory) has been unusually high here during the past week," he continues, "with a maximum degree of 86 to 88 almost daily. High winds prevailed and a good rain fell on April 2d."

A. H. Finch, Tucson, Ariz.

"March has been somewhat cooler comparatively than the earlier part of the winter and we hope this may have a beneficial influence on rest period of the fruit trees," he writes for the week ending March 26th. "However, we anticipate decided dormancy troubles. In fact, these are already showing in some of the early peaches and plums.

"Some results are apparing from our treatments. The buds on some pecan trees sprayed with dinitro during the winter are beginning to break now but are not far enough along to reveal the character of foliation and blossoming. Peach trees sprayed with dinitro are breaking earlier than checks. Pecan shoots have been cut and placed in a warm greenhouse at two weeks intervals since the first of January. In none of these have the buds broken normally."

Paul W. Miller, Corvallis, Oreg.

"Relatively cool temperatures have prevailed in the Pacific Northwest during the week just passed," he writes March 26th. "On Tuesday approximately 2 inches of snow fell at Corvallis. The cool weather is holding back the development of filberts and walnuts as well as other tree fruits."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Ascospores from overwintered leaves were showing color on March 7," he writes April 1, commenting on pear scab observations. "Both the ascospores and the conidia in overwintering twig pustules have matured much before any susceptible host tissue will be exposed for infection. Our precipitation has been unusually high for this time of year and whether orchardists could pull spraying equipment into the orchards in time appeared problematical. However, after several snow storms and more rain, clearing weather occurred March 28 and most growers have applied the lime sulphur spray at the present time. We still anticipate considerable trouble, however, if our rainfall occurs at a normal pace for even with the best of spraying one is bound to miss covering some of the open twig lesions.

"A fairly complete survey of the orchard districts has been made for twig scab and it was found to range from slight to very severe in the scab areas. The east side of the Lower Valley was found to be severely infected and constitutes the worst menace. Two orchards in the Dee section were very severe with scattered infections in others. An examination of the Parkdale district showed a few twig scab lesions which is the first time it has been found there. This orchard bore less than 1 percent scabby fruit last year.

"Growers have been warned against the serious nature of pear scab this year by means of talks at growers' meetings and among selected groups. They appear to be much more sincere in their efforts this year to spray their orchards well.

"Through our efforts, the Apple Growers Association has ordered 500 pounds of copper phosphate which will be sold to a few growers in the worst scab areas for a limited commercial trial. Our tests during the past six years have shown the material to be the only one we could recommend with safety on the Anjou pear in this district. One Pacific Coast company quoted a price of 26 cents per pound, while the Alabama factory offered the material at 15 cents. Even with freight charges, the eastern material will be 7 cents per pound cheaper. It is hoped this figure can be further reduced if the mixture is found to be satisfactory in the hands of the growers themselves."

E. S. Degman, Medford, Oreg.

"At the present time the bud-scales are beginning to drop on the Anjou," he writes March 22, from the U. S. Pear Field Station. "This is about 6-8 days earlier than in 1937. Freezing tests indicate that the buds will stand down to 20-22°F. now without injury."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The second or calyx spray was applied to our various experimental plots at Ruppel's orchard April 1. The sun was shining during the morning and only a light breeze blowing, but at noon the sky became overcast, the wind shifted to the northwest, and the thermometer started downward. It stood at 50°F. at noon, was 48° at 2:30, 45° at 3:30 and 42° at 4:15 p.m. Light snow flurries occurred at 4 p.m., making the day unique as this is the first time I have ever sprayed with snow falling! A minimum of 28°F. was reached during the night and crop prospects are problematical this morning--April 2. The general concensus of opinion is that strawberries have been very seriously injured as there was a heavy frost and some ice formed. Cherries are probably seriously damaged. The fate of the apples is undecided. The temperatures are still comparatively low and unless there is a change we will have additional injury."

Returning from a vacation, during which he visited the New Mexico Agricultural Experiment Station and conferred with Prof. R. F. Crawford concerning the type of apple measles found in New Mexico, obtaining specimens of the disease and soil samples for further experimentation, he reached Fayetteville on March 22 to find that the apple trees had advanced to such a degree that Mr. Wilson had already started the spray experiment, plans for which had been prepared before the vacation.

"This is the earliest date on which we have applied the cluster bud since I have been in Arkansas. An examination of the plots the next morning showed that only a few trees have a large crop of blossoms. There will be some fruit on all of the trees but the total crop will be very light."

M. A. Smith, Columbia, Mo.

"The outstanding event of the week ending April 2, was a frost and freeze. The frost occurred in the Ozarks on the night of March 31. Apparently very little damage was done to fruit. April 1 the temperature started dropping at noon and by 4 the next morning had reached a low of 27°F. Because of the unusually early season, fruit was in a stage where a hard freeze could do serious damage. Apple buds were examined April 4 and apparently many of them survived the cold though it is perhaps a little early to be sure. Peach and plum buds in the vicinity of Republic and Marionville were nearly all killed. On the other hand, Mr. P. H. Shepard of the Missouri Fruit Experiment Station at Mountain Grove, 65 miles distant, reports that enough peach and plum buds survived there to insure a fair crop--this statement being made with the proviso that no further frosts occur!"

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

Writing from the Cranberry Disease Field Laboratory on March 26th, he says: "The analysis of a series of soil samples from a small plot of cranberries, on a mostly sand substratum, which had received a heavy application of copper sulfate solution has just been completed. In general there is a localization of copper in the upper soil layer. By far the greatest amount of copper is found in the upper two inches of soil and decreases rapidly as the depth increases. At depths greater than 6 inches only traces of copper are found. These observations are in agreement with the results of analyses of soil samples from heavily sprayed bogs only in this series we were dealing with much larger amounts of copper.

"Cranberry seedlings transplanted 3-4 weeks ago are growing nicely and now have one or two true leaves. The sterilization of seeds taken from rotten berries has resulted in a much higher percentage of survival of seedlings."

John H. Weinberger, Fort Valley, Ga.

"A 2-1/2" rainfall on Wednesday definitely ended the period of dry weather we have been having," he wrote to Dr. Cullinan on March 21. "Cultivations of the orchards, delayed until frost danger was past, was interrupted, and now it will be several days before the land will be dry enough to work. Soil samples were taken on Thursday, and it was found that under the dry tree the soil had more moisture than last fall, including first, second and third foot depths. The top foot still appeared dry, nevertheless it had gained considerable water, presumably through capillary action. It should not require much time, however, for the tree to exhaust the available supply and again show moisture stress.

"The cheesecloth was removed from the tented limbs last week and an excellent set of fruit was found on all those selfed. The bags were stretched tightly so that the cloth could not whip around and knock off the bloom.

"Some winter injury is showing up in scattered areas, but where it appears it is usually severe. The trunks of the trees injured are not necessarily affected; often the injury is confined to large scaffold limbs with bark on the one-year wood killed and the trunk uninjured. In one orchard, limbs on the southeast side of the tree were most often killed. It is regarded as typical winter injury, though not the frost-collar-girdle type, and has been attributed to the 18°F. temperature experienced November 21, 1937."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"To date the rainfall data for Davis shows about 24 inches for the season, which is 8 inches above normal, and 11 inches above normal to date," he writes March 22. "With all this excess there have been a great many floods in various sections of the State. However, in this particular region damage due to flood waters has been practically nil. The rainfall has been such that there has been comparatively little runoff. As a result, water tables are very high throughout this district. Just what effect this will have on fruit orchards is still problematical, but we can probably expect to have considerable root killing, as all the trees are beginning to push rather rapidly now, and in many cases water is still standing in the orchards. If root killing is common we can expect to see dead spots showing up in orchards this summer.

"In a previous letter I said that I had seen no damage to deciduous trees because of the high wind of several weeks ago. However, in certain sections there was considerable damage to fruit trees. Most of these orchards are being rehabilitated. The expense, actual and potential, involved in propping these fallen trees and pruning them back is considerable, and will be a severe blow to orchardists unfortunate enough to have suffered damage of this kind....The continued damp weather has also resulted in a heavy infection of brown rot, as nearly as we can tell at this time. Infections are very common in the apricots and as many orchards have been too wet to get the spray rigs in, it looks as though brown rot will gain a good hold this season. We will have an opportunity to estimate resistance to brown rot among the apricot seedlings if this proves to be true."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. R. Hoffman (vegetable crop investigations)

"We do not mean to overdo the subject of cover crops in the weekly reports," he writes March 27th, "but the unusual growth of the Austrian peas and hairy vetch at the station may be considered as an index of the early and rapid growth of many trees and smaller plants this spring. The covercrop is several weeks more advanced in growth than usual. Pecan, tung oil, Asiatic chestnut trees and grape vines are all at least three to four weeks more advanced than ordinarily.....The first cutting of asparagus for this season was made on March 24. Spears are of much better size and quality at this cutting than at the corresponding cutting last year."

N. H. Loomis (small fruit investigations).

"The peaches and pears which blossomed during February now are loaded with fruit and the prospects for an excellent crop, despite earlier predictions that the crop would be frozen."

VEGETABLE INVESTIGATIONS

Ross C. Thompson, Beltsville, Md.

The role of temperature and light in breaking dormancy in lettuce seed is the subject of some studies being made by Ross C. Thompson of the Vegetable Investigations project, at the U. S. Horticultural Field Station, Beltsville, Md..

It has been reported that the limiting factor in the germination of dormant lettuce seed is its light requirement. Some previous investigations have indicated that light and especially the rays in the red portion of the spectrum have a stimulating influence on the germination of dormant lettuce seed. However, the studies at Beltsville show that unless the temperature is right, exposure to light may have little influence on the germination of dormant lettuce seed.

These investigations show that at temperatures between 50° and 70°F. exposure of moist seed to diffused sunlight has a marked stimulating effect in breaking dormancy. But, as the temperature increases above 70°F., light, whether full spectrum or from the red portion, loses its influence very rapidly.

Dormancy in lettuce seed has been found to be intensified by holding the moist seed at temperatures above 75°F. especially if aeration is poor. Dormant seed held in tap water or in a state of saturation at 75°F. or above germinates very poorly, even with long exposure to light and is very slow to germinate when placed at a favorable low temperature of 50° to 70°F.

A method of treating dormant lettuce seed has been worked out that makes it possible to dry the seed following the treatment and still obtain satisfactory germination if planted within two or three weeks after treating. The treatment requires that the dormant seed be held under favorable conditions of moisture, temperature, light, and aeration until the germination process has begun and then the activities associated with germination must be arrested by slow drying of the seed.

THE METHOD

A procedure that has been effective on a large number of samples of dormant lettuce seed is as follows: The seed is held in water for two hours, preferably at temperatures between 50° and 70°F. The seed, after soaking, is spread thinly on a damp surface and exposed to diffused sunlight for 15 minutes to 1 hour at a temperature below 70°F. After the exposure, the seed is dried very slowly in darkness at a temperature around 50°F.

ONION VARIETIES AND LENGTH OF DAY

The Gardners' Chronicle (London) for February 5, pays Roy Magruder and H. A. Allard a nice compliment by devoting its leading editorial to a review of their Journal of Agricultural Research paper (May 15, 1937), "Bulb Formation in Some American and European Varieties of Onions as Affected by Length of Day."

"A few centuries ago," it says, "There came but a thin trickle of new plants into the garden; in the eighteenth century the trickle became a stream; and in the nineteenth the stream changed to a swollen river. Today the spate of new species has subsided, but in its place has appeared the flood of new varieties raised by horticulturists the world over. New hybrids and new species which take the gardeners' fancy in one country no longer 'blush unseen' by foreign eyes. They are transported to the four corners of the earth in the hope that there also they will thrive. Yet this hope would be less pious and more certain if they were despatched to countries whose seasons were not too unlike their own."

Well, Magruder and Allard undertook this study largely to help in that direction, the work being another striking example of the way in which the Department grows in response to the pull of environment, inaugurating its investigations primarily to meet practical needs, responding to a definite summons, "either a signal of distress or a new opportunity for service." So difficulties of a very practical nature paved the way for the studies. Most of the varieties commonly grown in the late onion-growing sections of the United States, fail to bulb normally when grown in Southern Texas, for example. Other varieties commonly grown in the Southern States have failed to produce satisfactory crops in the Northern States. On occasions when a shortage of onion seed existed in this country, seed from northern European countries was imported, but the plants therefrom in many cases failed to produce normal, marketable bulbs.

The tests, conducted at Arlington Farm with 18 varieties of onions commonly grown in the United States, 8 varieties commonly grown in northern European countries, and 2 varieties from other European countries, indicate that the success or failure of an introduced onion variety in any new location probably can be fairly accurately foretold by comparing the length and the photoperiod of the growing season of its native home with those of the region into which it is to be introduced.

"What is true of onions is true of many plants sensitive to the length of day," contends the Chronicle's editorial. "The vast host of species we grow successfully outside do not only owe their continued presence to our skill and to the vagaries of climate; to these we must add the varying distance the sun must journey...."

ADMINISTRATIVE NOTES

Annual Leave — In submitting annual leave slips for periods between the forenoon and afternoon some indication should be given as to whether the lunch period has been included. For instance, if you are taking leave from 11:30 a.m. to 4:30 p.m., inclusive, you could make out the leave slip for 4-1/2 hours, or you could have it read from 12 m. to 4:30 p.m. and leave at 11:30 a.m.

This is suggested because when some leave slips are received in the Business Office it cannot be determined whether the lunch period has been included or not, and inasmuch as we do not wish to charge excess time for the same, it would be appreciated if the above suggestion is followed. We have been charging the leave slips just as they were made out, but it is felt that in some cases the employees have neglected to include their lunch periods in the time requested and in the future it would clarify matters if they would indicate whether or not such allowances had been made.

Attention is again called to the fact that some of the field employees are not submitting their leave slips through their project leaders, and it will be appreciated if such action is taken in the future.

Cement — A letter from the Procurement Division of the Treasury Department tells us that the Director of Procurement will undertake to enter into contracts for Portland cement required by all Federal activities for both departmental and field services, as well as cement necessary for construction contracts where the use of cement purchased under the Federal contract will result in economies to the Government. These contracts will become effective late in April.

"Departments and independent establishments will not negotiate contracts for this commodity at the termination of any contracts that may now be in effect," says the announcement, dated March 22, 1938.

Departments and establishments may, until such contracts have been consummated, continue to purchase such cement as may be required for immediate use, but every such purchase must be reported in detail to the Director of Procurement, which means that where such purchases are made by you the information should be sent to our Business Office, addressed to Mr. Gillette, promptly. The report must show the quantity, date of purchase, name and location of contractor, price paid (stating whether f.o.b. mill, warehouse or destination) point of delivery, and, if delivery is other than point where cement is to be used, both point of delivery and point of use.

ADMINISTRATIVE NOTES

Advance of Funds — It may be of interest to travelers of the Division to know that the new fiscal regulations authorize advance of funds in amount of $25.00 or over. Anyone wishing to secure an advance of funds to cover subsistence expenses while traveling should send in a signed application (Form 1038a) along with the request for the letter of authorization for the trip. As such advances of funds are made for subsistence expenses only, the estimated amount for subsistence given in the request for the letter of authorization must, of course, equal or exceed the amount of the advance requested. Also, as applications for advance of funds will not be forwarded to the Treasury until the letter of authorization has been signed, it is necessary that such application forms reach the Business Office not later than five days prior to the date the check should be mailed from Washington, D.C.

Gasoline Courtesy Cards — In the News Letter of March 1 you were advised that the Gulf Oil Corporation would issue courtesy cards for use in making purchases of gasoline and oil in certain States, and information was furnished regarding the method of obtaining these courtesy cards. We have now been informed by the Gulf Oil Corporation that in view of a recent ruling by the Comptroller General, these courtesy cards will not be honored except at company-operated filling stations. Effective April 1, 1938, these credit cards will not be honored at any of the dealer-operated service stations of the Gulf Oil Corporation. Inasmuch as there are only a few company-operated filling stations, it is not believed that the courtesy cards will be of much value. When courtesy cards are issued, the Business Office should be advised of the number of same, the U.S.D.A. license number of the car to which the card has been assigned, and the State or States covered by the card.

Wildlife Habitat — In order to bring about better coordination between those bureaus and agencies of the Department sponsoring or engaging in drainage operations, and in order to guard against the initiation of projects that might result unnecessarily in serious injury to or in ultimate destruction of important wildlife habitat, thus directly affecting the Department's program of restoration and conservation of wildlife, Memorandum No. 744 of January 11, 1938, from the Office of the Secretary directs that copies of plans for such projects must be submitted for approval to the Bureau of Biological Survey before work is actually undertaken. Any such plans, of course, should be sent to the Chief of Bureau through the head of the Division for consideration with the Bureau of Biological Survey.

ADMINISTRATIVE NOTES

Bids A notice has just been received advising us that no bids will be opened in Washington, D.C. after June 10; and no acceptances will be made of field bids after June 20.

It is imperative that early consideration be given to any proposed purchases of equipment or supplies involving the issuance of bids. Time should be allowed for bids to be received and accepted. In the case of purchases that will be handled on Government bill of lading or where bids are called for f.o.b. the dealer's shipping point, it is necessary for the Division of Purchase, Sales and Traffic of the Department to obtain freight rates. Quite often this involves several days delay where land grant roads are involved, and this must be considered in allowing for acceptance of bids.

We also wish at this time to call your attention to the fact that when bids are obtained in the field the prospective bidders should be warned to allow sufficient time for the bid to be sent to Washington, D.C. and passed on there. Many bidders make a point of entering in the proper space on the bid a qualification that the bid must be accepted within from 1 to 5 days. Usually this time has expired before the bids reach Washington, and such qualifications seldom allow sufficient time for passing on the bids. It is our suggestion that wherever possible you notify prospective bidders that they must allow at least 20 days for acceptance of their bid.

In past years a memorandum has been sent out about this time calling upon our various stations to consider their needs and place their orders in early spring. It is imperative at this time that all orders for materials or supplies that are to be placed through the Washington, D.C. office be sent in at the earliest possible date.

Tax exemption Certificates On the recent regular check up of tax exemption certificates, it was discovered that in several instances tax exemption certificates issued to one individual had been used by another employee.

We wish to call your attention to the fact that tax exemption certificates are non-transferable, and in case any one who has occasion to use such certificates does not have a supply on hand to cover the purchase of gasoline or other commodities involving a tax, he should apply immediately to our Business Office for a book of tax exemption certificates. Do not use certificates issued to some one else.

PUBLICATIONS

Bureau of Plant Industry Memorandum No. 983, issued March 17, 1938, contains two modifications of the regulations governing the distribution of publications:

(1) Where 8 or more publications are to be sent to a single person, an addressed frank and order (Form 75, white, for Farmers' Bulletins and Leaflets; Form 74, blue, for all other publications) must be furnished. The frank should have the name of our Division written or stamped on its back, while the order should have the name stamped on the front and be initialed by the person ordering the publications.

(2) In ordering less than 8 publications, any kind, an ordinary franked and addressed manila bulletin envelope (about 7x10-1/2 inches) is used, the series and number of the bulletins and the copies of each desired being written on the inside of the flap of the envelope, which should also bear the name of our Division and the initials of the person ordering the bulletins so that the envelope may be returned promptly to sender in case the publications, for some reason, are not available. (In the past, of course, we have been placing the name of the Division on the front of franks and envelopes; in future it goes on the back of the frank, and on the inside of the flap of envelopes.)

In order to expedite the distribution of publications, it has been decided that orders shall be sent direct to Mr. James M. Pickens, Bureau Office of Publications, Room 215, West Wing, thus saving the time necessary for routing them through Mr. Gilbert's office.

Franking Privilege — Within the scope of the employee's official work, the penalty (franking) privilege may be used for mailing free the following:

(1) Official correspondence relating to the business for which the employee received his appointment. When an employee writes to a private party on official business for information of value to the Bureau, he may enclose with his letter an official envelope properly addressed to himself to cover the reply. (This does not include the supplying of franks for use in mailing to the Department material such as fruits or plant specimens. It is consistent, however, to reimburse the sender for the amount of postage paid for material by parcel post by returning to him postage stamps covering the required amount.)

(2) Publications: (a) Bulletins, pamphlets, etc. issued by the Department. (b) Bulletins, pamphlets, etc. issued by State agricultural colleges or experiment stations containing information on pertinent agricultural subjects, to persons asking for information or conducting experiments within the scope of the employee's work, when accompanied by a letter of transmission signed by the employee.

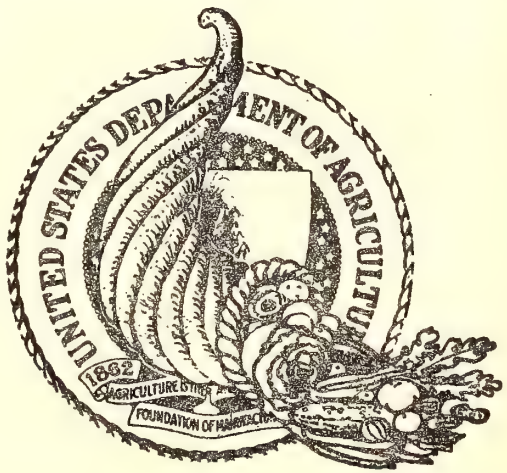
Proof — Be sure to initial galley and page proof before returning it to Mr. Gilbert's office. This is essential to show that you have made the changes or at least seen and approved any changes made in the proof. Every now and then proof comes back, marked up, but with nothing to indicate who has done the reading and correcting.

Vol. 10 No. 8 April 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., May 1, 1938 No. 9

Pollinating the Avocado

A fruit store man was trying to interest the newly wed young woman in some of his stock. "Perhaps you'd like to try a few of these avocados--alligator pears?" he suggested. The young woman blushed embarrassedly. "No, thank you," she said. "We haven't an alligator. In fact we can't afford goldfish just yet."

In tropical America, of course, the avocado has long been one of the most important food crops. The average native there considers a few corn cakes, a cup of coffee and an avocado as a real meal--and it is, or they are! The avocado there serves in a measure as a meat substitute. It is puzzling to understand why this nourishing and appetizing fruit was so slow in winning favor among our people. It is going places now, however, and the most outstanding developments in commercial culture have taken place in the United States, where thriving avocado industries have been established in California and Florida.

The avocado pollination problem has always been an interesting one, so we are glad to have some notes from T. Ralph Robinson of our section of subtropical fruit production, concerning the work he has been doing in Florida along this line.

"In hybridizing avocados to secure much needed disease resistance and hardiness, the technique necessary differs considerably from that employed with citrus and most other subtropical fruits," he writes. "Flowers are produced in such superabundance that the percentage that set and mature fruits is very low even under the best conditions for pollination and culture. A full bearing tree may have upward of a million individual flowers, several hundred to a cluster, yet a good crop would consist of 100 fruits or more.

(continued) SUBTROPICAL FRUIT PRODUCTION

"The situation is complicated by the fact that the avocado is proterogynous, its flowers being receptive only on the first opening when no pollen is shed. Anthers do not open and furnish pollen until the second flower opening on the day following the receptive state. The fact however obviates the necessity for emasculating large numbers of flowers since self pollination is practically prevented in most varieties commonly grown in Florida. One group of varieties (The A group) furnish pollen only in the afternoon, having their receptive stage in the morning; the others (B group) are morning pollenizers.

"To successfully pollenize large numbers of flowers within the limited time when flowers are most receptive, the following technique has been worked out: Bloom panicles are selected before any flowers have started to open and are covered with a bag of ordinary mosquito netting. This permits sufficient aeration and illumination for normal flower development but prevents the visits of flying insects. As flowers start to open these net bags are opened each day and all open (receptive) flowers are pollinated with freshly picked polleniferous flowers of the male parent selected. This is a simple matter when the two parents are of A and B groups, respectively. When it is desired to hybridize two varieties of the same group, as Taylor and Lulu (both A group), the difficulty has been solved by a simple expedient: Pollen flowers with stems several inches long are gathered from Taylor, for instance, in the afternoon, placed in a beaker of water and set in a refrigerator. The low temperature maintains these flowers open in good condition for use the next morning when Lulu will have receptive flowers ready for pollination. When brought out in the warm air these chilled flowers must be used fairly promptly as they start closing as though still attached to the parent tree.

"The Collinson variety makes an especially good female parent in breeding work, as it has proved entirely pollen sterile, hence any fruits secured result from cross-pollination. It is valuable for its resistance to scab, good fruit quality and appearance.

"By daily pollen applications as outlined above over a period of 2 to 4 weeks several thousand flowers may be hand pollinated without a great expenditure of time and labor. Even when dealing with such large numbers the chances of carrying through to maturity any considerable number of hybridized fruits are none too good, but a few are secured each season.

"Another method in progress is the budding of two 'reciprocating' varieties on one stock. Such trees will then be tented at blooming time, with bees to do the work of cross-pollination."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

C. O. Bratley, New York, N. Y.

"Shippers from South America and South Africa took advantage of our slack season during February, March and April by sending more fruit to New York City than ever before," he writes. "Their shipments opened with several thousand boxes of Williams (Bartlett) pears chiefly from the Rio Nigra valley of Argentina. From this section the pears must be shipped 26 hours by unrefrigerated rail to the precooling plant at the port. In about a third of the shipments the fruit was firm ripe to ripe with some boxes showing many fruits with scald and internal breakdown. In a 300 box lot from Chile 35 percent of the fruit was completely broken down.

"Argentine grapes of several varieties (mostly Almeria, Emperor, Dattier, Lactuario, Alfonse Lavalle and Ferrels) in shipments of about 40,000 lugs per week arrived in good condition with an average for the season of less than 1 percent gray mold rot. Various growers' lots from the Mendoza section showed as much as 10 percent decay, while the grapes from San Juan were less decayed but showed high percentages of scarring. Precooling plants are available in both of these districts. None but precooled fruit is taken on board the ship at the port.

"Most of the grapes are inferior in quality to our domestic grapes, being smaller in size and attached to irregular shaped long stemmed bunches. The 20 lb. net lugs sold for $1.35 for Alfonse Lavalles to $1.90 for Almerias.

"With the experience gained from two experimental shipments last year that were accompanied by representatives of our Plant Quarantine Service, the South African shippers have made 4 shipments of about 10,000 boxes each to New York this spring. The fruit is precooled at Cape Town and shipped to Southampton where it is transferred to cold storage to await shipment to New York. Thus the grapes are enroute about 30 days. Quarantine rules require it to be held continually at 34° or below for at least 2 weeks. Ten pounds of individually wrapped bunches packed in excelsior are contained in each box. Alfonse Lavalle variety predominated with lesser quantities of Red Muscat, Gros Colman, White Hanepoot, and Hemab Turki varieties in the shipments. Alfonse Lavalle is an early, large, black grape, resembling somewhat our Ribier. Another shipment now enroute is mostly of the Barlinka variety. The first two shipments were in fine condition and sold for an average of $1.75 and $.95 per box, respectively. At least 10 percent of the berries and 50 percent of the stems in the third shipment showed gray mold. The average selling price for these grapes was $.75. The fourth shipment arrived during the Easter market, and though a few lots showed from 5 to 10 percent decay, the average selling price was $1.05

"It is said that the transportation charges alone exceed $1.00 per box, but that government subsidy absorbs part of the losses. The drop in price between first and second shipments was due to poor consumer demand for these moderately poor flavored grapes at from 25 to 30 cents per pound."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffmann (Vegetable crop investigations)

"I suppose this rain will do a lot of good?" remarked the visitor to the station superintendent as they gazed out at the steady downpour. "It's been so dry here lately," agreed the superintendent, "that an hour of this rain right now will do more good in five minutes than a month of rain would do in a week under average conditions." No, I don't believe this conversation actually took place between Dr. Magness and Mr. Hoffmann, although it is true that Dr. Magness arrived at Meridian the morning of April 7 just in time to encounter the rainiest day of the season, 4.27 inches falling, practically at once!

"In almost any locality a person may be, and at almost any time, the residents of that locality will tell him they are having unusual weather," and now we are quoting Mr. Hoffmann. "In case, therefore, that our report of unusual weather might be thought to be of the usual type, we are giving a few figures to show that it is really a little more unusual than usual. The rainfall for April 6, 7, and 8, respectively, has been 2.98, 4.27 and 1.83 inches. Though occurring in the records of three days, this total of 9.08 inches fell in approximately 48 hours.

"Needless to say, the outdoors is literally 'all wet.' These rains flooded the lowlands throughout this section and have caused serious floods farther south. The early warm spring temperatures were replaced at the first of the week by unseasonably cool ones. Maximum temperatures dropped from 76°F. to about 40°, maximum for Saturday not having yet occurred as this is written. Minimums have ranged from 61° to 39°. There was a frost Sunday morning, April 3, and a slight touch of frost on Monday morning, April 4. So far the low temperatures have apparently not injured vegetation.

Writing April 2 he said: "Asparagus cutting is progressing in fine shape and the 'grass' is of extremely high quality. Cutting is much earlier this year than it was last year--the clean up or first cutting for 1938 being on March 24 as against April 14 for 1937. The heavy application of stable manure to asparagus planting has unquestionably contributed much to spear development, and it is interesting to observe that thus far the plots having a pH of 6 and slightly above are yielding our best quality and highest quantity 'grass' in every respect. Cut worms doubtless following the stable manure application, have been noticeably much worse this year than during previous years.

"The supposed low form of plant growth which has been interfering with circulation in the cold storage cooling system has been cleaned as well as possible without tearing out the pipes."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"During the week cultivation of all experimental trees on the grounds was completed, and a first cover spray was applied to bearing peach trees," he wrote to Dr. Cullinan on April 4. "Also a second thinning was made in experiments with Hiley, Early Hiley, and Early Rose varieties. Some Early Hiley peaches are now the size of walnuts, and Early Rose peaches have long since shed their shucks. Last year at this time Early Rose orchards near Fort Valley were in full bloom. It is expected that the season this year will be 10 to 15 days earlier than last year.

"Thinning is in full progress in most orchards not previously thinned in the bloom, though the natural dropping of fruit has hardly begun. Mr. Baird has had 100 'hands' thinning for the past 10 days and expects to finish up this week. Labor is more plentiful now, before cotton chopping starts, and he believes the benefits of early thinning on a heavy set of fruit will more than repay the cost of the extra time required to thin before the natural drop occurs.

"Forest trees and shrubs are now in leaf and the lone apple tree on the station grounds is in full bloom..."

E. S. Degman, Medford, Oreg.

"Temperatures have ranged from 30° to 64°F. lately," he writes March 14th. "The weather has been mostly cloudy but not much rain has fallen. The weather bureau station at the airport reported 4.65 inches of rain for February, but here at the Pear Field Station about 5.6 inches fell.

"We have just completed measuring the terminal shoots in Block 4 and will start Block 1 tomorrow if the weather permits. The blossom bud counts are also about finished in Block 4....

"The buds are swelling rapidly and growers are beginning to put their smudge pots out. It appears now that the 1938 bloom will be about normal, beginning around April 10. However, it could easily be advanced or retarded a week or two by unfavorable weather conditions."

C. P. Harley, Wenatchee, Wash.

"According to a survey made by the local inspection office, approximately 700 acres of orchards have been removed during the season of 1937 and up to the present time, April. This does not include the tree removal program for the benefit of permanent trees but rather those orchards that have been operated at a loss during the past 4 or 5 years due to poor location or unprofitable varieties. Just how many more acres will be removed this season will perhaps depend on the number of growers who will be adequately financed for the coming season."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"Since my last report we received a very severe freeze, or series of freezes, during the period April 7, 8 and 9, and now are able to have a fairly accurate idea as to the amount of damage resulting to fruit crops," he writes from the U. S. Fruit Diseases Laboratory on April 19th.

"Recent estimates place the damage as follows: To apples in central and southern Missouri, 90 percent of buds killed. Peaches and plums, 100 percent killed; cherries, 90 to 100 percent killed. Apparently the only apple varieties in southern Missouri escaping damage were Ingram and Rome Beauty, both late blooming varieties. The crop in northwestern Missouri is reported as only slightly damaged. In eastern Missouri the fruit districts in the vicinity of Hannibal, Clarksville and Louisiana report some damage but it is generally not serious. In southeastern Missouri peach buds were seriously injured and apples suffered likewise. Strawberries in central and southern Missouri were injured--i.e., the early buds. It is estimated that the loss to the strawberry crop will be 50 percent.

"Our experimental plots at Mountain Grove, variety Rome Beauty, came through with practically no damage. These trees were in full bloom April 15th."

John C. Dunegan, Fayetteville, Ark.

"The effect of the snow storm and accompanying low temperatures last week is still somewhat in doubt," he writes April 16th. "Many growers insist that the apple crop has been materially reduced, the grape crop injured, and the strawberry crop ruined. Others minimize the prospective losses. Our apple plots at Ruppel Bros. were injured and I am very much afraid that there will not be enough fruit on the trees for a satisfactory test of the various fungicides."

C. A. Meckstroth, Willard, N.C.

"So far I have been unable to find spores of the leaf spot and leaf scorch fungus on slides exposed over night in and to leeward of a strawberry field," he reports April 9th. "I could find only what appeared to be pine pollen and nematodes....The strawberry market at Wallace opened officially early in April, with smaller markets opening at Burgaw, Teachey, Warsaw, Rose Hill and Mount Olive. The strawberry market at Chadbourne opened April 8....We had several rainy days, with very heavy rain the night of April 8th. For the period from April 1 to 9, we had a total rainfall of 6.13 inches.

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"We started collecting our data on the cover crops and find we are getting heavy increases in some treatments on some soils, but so far there is a wide variation in the reaction of the different soils," he writes April 2. "In checking over the cover crop as it grows in the orchard, without some stimulation from fertilizers or manures, it would seem practically impossible to maintain cultural conditions in the orchard on a satisfactory basis without some additional help in that way. The cover crops in some of the orchards outside of our blocks are not enough to pay for the cost of the seed, and this has been an exceptionally good season.

"Of course, not all orchards are as bad as some I have been in, but the growth that we have checked on would indicate that these orchard soils have been depleted to such an extent that it is going to be impossible to bring them to anything approaching their former fertility level without adding fertilizers or manures. We have been working off and on with cover crops since 1929 and we are finally convinced that we have not been maintaining the fertility level in the orchards during that time. Even the best of the orchards hardly maintain the basis they had some years ago."

F. N. Dodge, Robson, La.

Writing from the U. S. Pecan Field Station on April 18th, he says: "There is a very marked difference in the color and amount of the foliage on the trees in the sod plots and those in the cultivated plots. It looks like the cultivated trees have more than twice as much leaf area per tree as the trees in the sod plots, and the foliage on the latter is yellow, while that on the cultivated trees is green and healthy looking. Differences in the amount of both staminate and pistillate bloom can also be observed with the greatest amount of both being on the cultivated trees."

He had written April 11: "The wind and cold has damaged pecan foliage a little by tearing it and killing the tips and edges of many leaflets. The tips of the stigma of many of the pistils have become dried and brown. It does not appear, however, that the damage is serious.

"Due to the cold weather this week there has been very little advancement in the development of pistillate blossoms and practically no pollen shed, except for Moore and Desirable. These varieties have made an effort to initiate pollen shed during the week....Pollen was shed by Nelson trees April 1, two to three weeks earlier than the past two seasons. This year, too, staminate bloom on pecans appeared three to four weeks earlier than in the past two years; similarly, pistillate bloom made its initial appearance two to three weeks earlier than it did in 1936 and 1937."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"In the vicinity of Davis, all commercial almonds are done blooming, includingthe Reams, one of the latest varieties to blossom," he wrote for the week ending April 2. "A number of late bloomers were discovered in our hybrids in Field 6. Some of them are just coming into full bloom now, and they are, therefore, much later than the latest of the commercial varieties."

C. L. Smith, Austin, Tex.

"The temperature at Brownwood went down to 29°F. on the night of April 2 and the frost killed all the new shoots on the Station trees to a height of about 6 feet from the ground. Apparently the rye and oats cover crop prevented air circulation up to that height. It is yet too early to predict the full effect of the freeze on the crop for this year.

"The temperature at Austin today, April 7th, was 39°F. with the prediction of a freeze tonight."

Howard E. Parson, Shreveport, La.

Writing from the U. S. Pecan Disease Laboratory on April 9th, he says: "There has been much more rain this week. It began raining here about dark Tuesday night, April 5th, and continued almost incessantly until Friday night. A total of 3.12 inches of rain fell here this week. Spraying will be delayed some until the ground gets dry enough for machinery to get over it.

"The temperature went to a low of 36°F. Thursday night, April 7, and a minimum of from 26° to 30° was predicted for Friday night, but the temperature did not get below freezing."

He had written April 2: "There is a very fine set of pistillate bloom on Pabst trees in the Skannal orchard. Mr. Smith reports that all the other varieties are performing similarly and that there is a narrower range than usual in the time that the various varieties are foliating and blooming. He hopes that this will result in a better set and less premature shedding of nuts from his Centennial trees than usual.

"This set of nuts in the Skannal orchard comes after a yield last year of 102,000 pounds, and in a year when little is expected of other orchards around which bore heavily last year."

ADMINISTRATIVE NOTES

Regulations To avoid the necessity for the frequent revision of the Department Regulations, and also the undesirable increase in their physical volume, Secretary Office Memo. 751 of March 23, points out that detailed procedures which are subject to Department control have been generally omitted and instead the following statement was included in the order promulgating the regulations:

"These Regulations are supplemented by the following:

1. Secretary's Memoranda
2. Budget and Finance Circulars
3. Personnel Circulars
4. Division of Operation Circulars
5. Informational Memoranda to Chiefs of Bureaus and Offices."

To increase the effectiveness of the above described documents as supplements to the Regulations, all future issues of such documents which relate to the subject matter of specific Regulations will include the following statement as the final paragraph:

"This document supplements the instructions contained in Department Regulation No. ____. Employees maintaining copies of the Regulations should record this circular by an appropriate cross reference notation in their Regulations.

It is recognized that the original distribution of the supplemental media does not coincide with the distribution of the Department Regulations, but it is believed that coverage is provided, where necessary, by the reproduction of these documents as part of bureau house organs, administrative circulars, etc. "To accomplish the desired cross reference of the Regulations it is important that the foregoing paragraph, wherever it appears in a circular or memorandum, be included in any bureau reproduction of the original document," directs Memo. 751.

Foreign A memorandum from the Office of the Under Secretary, dated February 7, 1938, and addressed to all bureau chiefs and heads of offices, states that in the interest of uniform procedure it is desired that all routine requests for advice and information from American Foreign Service officials be handled through the Chief of the Bureau of Agricultural Economics. Often it happens that information can be obtained more expeditiously through the Foreign Agricultural Service or through direct contact with the State Department. "Adoption of the procedure suggested will facilitate the disposal of all such requests for routine information," says the memorandum. All such requests, of course, will be handled, through the Division, by the Chief of Bureau.

ADMINISTRATIVE NOTES

Leave of Absence. "Employees appointed by the Department in connection with cooperative work with States, etc., whose duties and time of work are supervised and controlled by Federal officers, are employees of the United States within the meaning of the annual and sick leave acts of March 14, 1936, 49 Stat. 1161 and 1162, regardless of whether a portion or all of their salaries is paid by the Federal Government, or otherwise, and should be regarded as in a continuous duty status for leave purposes," says a recent decision by the Acting Comptroller General.

"Where, under cooperative agreements between the Department of Agriculture and States, etc., employees are under the supervision and control of the Federal Government during six months of the year and under the supervision and control of the cooperating agency during the other six months, annual and sick leave under the Federal Acts of March 14, 1936, 49 Stat. 1161 and 1162, accrues only during the period the employees are under Federal control, and although such employees may be regarded as in a condinuous duty status and their Federal leave carried over from one continuous period of Federal control of one month or more to another, such leave may be granted only for taking during the Federal service, and leave accrued during service under the cooperating agency may not be taken during Federal service."

Automobile Accidents Par. 3162 of the Department Regulations covers the procedure to be followed in accidents connected with the operation of Government-owned cars and claims arising therefrom. From time to time this phase of the operation of official vehicles has been called to your attention and we wish again to impress upon you that forms for reporting accidents should be carried at all times in each vehicle. These are Standard Forms 26 and 27. The former must be filled out at the scene of the accident and the other completed and forwarded as soon as possible thereafter.

Our attention has now been called in Budget and Finance Memo. 97 to the procedure to be followed when accidents are caused by the negligence or misconduct of someone other than a Government employee. If you have an accident be sure to make out the proper forms immediately and if the accident is the fault of someone other than a Government employee it must be immediately referred to the Business Office of the Division with all pertinent facts or statements of witnesses in regard to the accident. The matter will then be presented to the Office of the Solicitor for appropriate action. If the accident is because of the misconduct of the Government employee, then the damage or other claims must be handled by the employee's liability insurance company, because you know YOU MUST carry liability insurance before you are permitted to operate a Government-owned vehicle.

ADMINISTRATIVE NOTES

Sick Leave Recently there have been cases where recommendations have been made to the Bureau for the granting of advance sick leave to employees of this Division which were reluctantly approved because the requests had not been sent in until after the employee had returned to duty.

Your attention is called to B. P. I. Memo. 986, dated April 9, 1938, which states that applications for advance sick leave should be submitted as soon as it is known that additional sick leave beyond that available to an employee will be required. Such applications should be supported by a statement from the attending physician giving a brief history of the case and recommending that the additional sick leave be granted. This statement must be forwarded as soon as all your accrued leave has been exhausted; and must indicate the nature of your illness and give the physician's estimate of the time you will require before returning to duty.

At various times your attention has been called to these matters by items in the News Letter and by memoranda, and it is urged that these Regulations be strictly adhered to in the future. Immediately upon finding out that you will be required to be absent from duty due to illness for an undetermined period, it is suggested that you ascertain the amount of sick leave to your credit and if it is felt you will require sick leave beyond the amount available, secure a statement from your physician, as outlined above, and send it in to the Business Office as soon as possible.

If these Regulations are not complied with in the future, the Bureau has warned us that approval will not be granted for advance sick leave but that the employee will be required to take annual leave, or leave without pay if no annual leave is available.

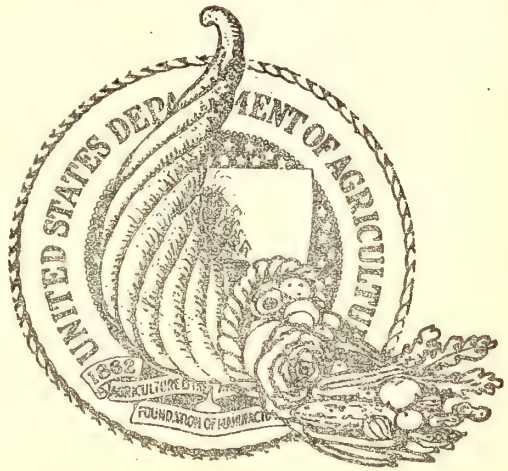
Travel The Acting Comptroller General of the United States in decision of February 24, 1938, discusses a voucher covering travel expenses containing a transportation request used by an employee who secured a first-class stateroom between two points, costing $4.25, a rate representing the exclusive use of a stateroom which contained two berths which might have been reserved separately--a lower berth at $2.25. The Comptroller points out that "first-class stateroom accommodation" in the Government Regulations is to be understood to mean the lowest first-class accommodation in a stateroom, which would be the rate for one lower berth. The transportation request as drawn requires the Government to pay for the entire stateroom instead of one lower berth, and it is held that the excess cost should be disallowed.

Vol. 10 No. 9 May 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., May 15, 1938 No.10

Precooling Delays in cooling reduce storage value of fruit and vegetables; there is no doubt about that any more. Fruit and vegetable growers may produce crops of high value and still fail of success because they do not get their product to the consumer in first-class condition. This is where the methods of precooling, developed and introduced by us, are projected into the picture.

"Produce cooled rapidly to slightly above freezing," says an item distributed to the newspapers by our Press Service," the temperature it might reach eventually in ordinary refrigerator cars, ripens more slowly and is less damaged by transit diseases. Recent studies show the practical effects of precooling. Two bushels of apples were gathered from the same tree in Oregon for shipment to New York. One bushel was placed in a refrigerator car and cooled rapidly before starting on the long trip. The other bushel was placed in another refrigerated car, but was not precooled. It probably did not reach the same low temperature as the first bushel until after 2 days or more. Upon arrival in New York, the two lots of apples appeared much the same--but the precooled apples kept in good condition 20 days longer than those not precooled. Each day's delay in cooling apples from 70° to 32° F. cuts off about 10 days of potential storage life that no amount of later refrigeration can restore!"

Of course, other products, such as peaches, strawberries, lettuce, spinach and green peas, are even more perishable than apples. Too, precooling methods are valuable in other ways--for example in drying potatoes and controlling losses from soft rot. Yes, potatoes harvested in the Southern early districts of the United States often come out of the ground covered with mud and are washed before they are shipped. Early potatoes keep none too well, anyway, and Florida growers were rather upset to notice how rapidly soft rot developed on wet potatoes. Drying became a serious problem for them, you see, especially during humid weather at the peak of the shipping season.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

PRECOOLING DRIES WET POTATOES

Precooling dries wet potatoes and controls losses from soft rot--that is the cheering message that Mr. Fisher gives us. Growers have found that precooling--the practice introduced by the Department in which produce is cooled rapidly before shipping--dries the potatoes quickly and effectively, preventing soft rot.

"The potatoes were precooled in the refrigerator cars with portable refrigeration units using either independent compressor units or by blowing air through the ice in the bunkers," says the announcement concerning this development of our work. "As the air temperature was lowered, excess moisture taken from the potatoes was condensed on the coldest spot reached by the air--the compressor coils on the ice--in much the same manner as moisture collects on a window pane on a cold morning.

"Precooling is a comparatively inexpensive means of drying potatoes in the Florida area, points out Mr. Fisher. Growers precool many kinds of fruits and vegetables and they have precooling equipment available during the potato harvesting season."

When farmers first were shown the advantages of precooling in general before shipment, its use was limited by lack of equipment. It was then available only in the cold rooms of warehouses in specialized areas. But we developed portable equipment for precooling fruits and vegetables after loading in the cars--and promptly the practice spread widely so that now the city housewife who expects to buy her fruits and vegetables as fresh and crisp as when they left the farm a thousand miles or so away, is not often disappointed.

ICE WATER BATH PRECOOLS FRUITS AND VEGETABLES

"Now, innovations introduced in Florida and California are expected to make precooling available to even more farmers, according to Mr. Fisher. The produce is placed in a trough of circulating ice water. In California the usual practice is to add crushed ice continually to the water to keep the temperature near freezing--the produce being washed at the same time. The disadvantage of this process is that the water becomes muddy before a day's precooling work is over.

"In Florida the produce is usually washed first and then placed in water cooled almost to the freezing point by circulation over refrigerated coils.

"This 'ice-water-bath' method has been successful in Florida and California in cooling such vegetables as green peas, celery, broccoli, cabbage, asparagus and other vegetables which a cold bath does not damage."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

James S. Wiant, New York, N. Y.

"For the past several weeks, periodic examinations have shown that phytophthora rot in small amounts is rather widely present in California asparagus," he writes from the New York Market Pathology Laboratory on May 2. "Reports from California state that considerable decay (including phytophthora rot) has been present in the field. This is presumed to have been a result of the excessive rainfall prior to time of harvest. On the market phytophthora rot has been the most important type of decay present. It was apparently responsible for very heavy losses during the latter part of March.

"One of the first cars of California potatoes (Edison district) coming into the New York area was examined during the latter part of last week. Approximately 4 percent of the tubers were decayed with bacterial soft rot. The car was shipped under initial ice only and arrived with temperatures of 57° F. top doorway and 52° bottom doorway. Further cars for the present receiver will have one reicing in transit.

"Chippewa and Katahdin potatoes from Maine have arrived on the market showing an unusual type of internal brown discoloration. In two carlots this was accompanied by a small amount of what appeared to be ordinary blackheart. The presence of this together with the absence of the usual evidences of freezing injury suggested the possibility of smothering or heat injury as the cause. A later carlot showed both a flabby water-soaked condition as well as the firm internal browning. Reports from Maine indicate that it constitutes a serious a problem that has developed during the past month. Dr. Folsom writes from the Maine station that tests will be conducted to determine whether or not the trouble is an unusual type of freezing injury...."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"My earlier prognostication for full bloom on apples for May first apparently will be more accurate than many others that I have made," he writes April 28th.

"From our observations today it looks as though full bloom on most varieties will occur about Saturday, April 30th, in the Wenatchee district proper. The valley is experiencing an unusually heavy bloom this year and barring adverse weather conditions during pollination should set a rather large crop. The cherry bloom was quite heavy and despite the somewhat adverse weather conditions for pollination, appears to have set a high percentage of blossoms."

DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Brownwood, Tex.

"Freezes disastrous to the peach and plum crops and injurious to the trees occurred on April 7-10," he writes April 16th. "High northerly winds from the general direction of the Texas Panhandle began the night of April 6, and within about 12 hours the temperature dropped 57° to a low of 31° F. at 4 a.m. on the 7th. During the day the temperature rose to 36°. April 8th it stood at 28° from 2 to 10 a.m., rising to a maximum of 38° in the afternoon. Snow accompanied the cold weather on the 7th and 8th. On the 9th the low was 30°, high 58°; on the 10th the minimum was 26° during two hours in the early morning, rising 44° to a maximum of 70° in the afternoon.

"Observations made during the past week at several points in Brown County showed that 100 percent of the peach and plum fruits were killed as a result of the unfavorable weather conditions. Growers report the apple crop as killed; and the injury to peach and plum foliage was severe. In orchards at Bangs, full-grown trees of Elberta, Early Wheeler, and miscellaneous varieties not authentically identified were observed. On the northerly three-fourths of the individual trees the leaves were completely killed or were injured beyond the possibility of functioning to any important extent, whereas injury was severe but less pronounced on the southerly one-fourth of the individual trees. Leaf injuries included: Blades entirely killed, deep marginal killing, and large scattered spots of killed tissues. In some instances, tender new shoots were partially or entirely killed, but in many cases shoot growing points appeared to be uninjured. Pith killing was common in one- and two-year-old shoots, and localized killing of cambium in such shoots was common. Older limbs appeared to have escaped serious injury. It was too early to judge possible injury from frost collar girdle.....

"In peach trees, no important differences were noted between normal trees and trees affected by the peach mosaic disease, in the matter of injuries to foliage, fruit, and shoots.

"During the past 16 years, in Georgia, we have frequently seen peach foliage frozen without the severe resultant injuries described. It is possible that a combination of high wind with great fluctuations in temperature, extending over a period of four days, which included repeated freezing and thawing, was responsible for the injury in Brown County, Texas, this spring. The fact that injury on the southerly quarter of individual trees was much less severe than in portions of the trees facing the northerly winds would seem to indicate that drying and bruising action of the wind on the frozen leaves may have been partly responsible for the regional distribution of severest injury in the individual trees."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"A thorough examination of the spray experiment plots on April 18 revealed the discouraging fact that the two frosts of the early part of the month have completely eliminated the crop in our 1938 apple experiment," he writes April 23d. "This lack of fruit will necessitate some changes in the spray program but work will be continued to test the effectiveness of the various fungicides in the control of scab and blotch on the foliage. Steady rain on the 20th and 21st brought conditions that were very favorable to the dissemination and spread of apple scab, The disease is spreading on the foliage in our non-sprayed plots."

E. S. Degman, Medford, Oreg.

Writing from the pear field station on April 18th he says: "Full bloom of Anjou occurred on April 10-12 at the station, just about normal. Time of full bloom as used by Ryall in his study of 'Time from full bloom to maturity', is really the beginning of bloom. Now, 8 days after full bloom, most of the flowers have opened but no petals have fallen. Bee activity in the pear blossoms is almost nil. Bees are much more abundant in an Anjou block near here which is on granite soil. The blossoms on those trees appear to have a great supply of nectar than do the blossoms at the station. There are plenty of bees at the station, but they prefer the mustard blossoms to the pears."

M. A. Smith, Columbia, Mo.

A note from Dr. Smith, dated April 25, concerning apple scab in Missouri, says: "A large percent of the apple crop in southern Missouri was destroyed by the freezes of April 7 and 8. While spray schedules have been followed since then in many orchards, in others very little spraying has been done. A survey last week showed that apple scab was becoming very severe in many unsprayed or poorly sprayed orchards. With continued favorable scab weather, we may expect a serious scab problem in southern Missouri this year."

John H. Weinberger, Fort Valley, Ga.

"The refrigerator car icing plant at Fort Valley is figuring on handling 2,900 cars of peaches this season," he writes on April 25th. "This estimate is much better than the 300 cars iced last year, and is slightly higher than the 1935-1936 figures. Years ago as many as 5,000 cars of peaches a season were iced at the local plant. More peaches are now being shipped by truck than formerly, and so the estimate does not approach the total production of the section."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The water has now been removed from a good many bogs in the State," he writes from the Cranberry and Blueberry Disease Laboratory on April 30th, "especially where there are large reservoirs to give frost protection. The majority of the bogs will remain flooded for another 10 days. Sanding is being done on a number of properties both from boats and on dry bogs. The warm days have brought blueberries into bloom very fast. On the 28th the Cabot was in full bloom in some sections and slightly past full bloom in other places. Pioneer was advanced nearly as far. Several other varieties were so covered with blossoms that they appeared to be at their peak until counts were taken. As predicted in our earlier reports, Cabot flowers had been injured and did not develop. The blossoming of Rancocas is rather erratic; in some fields where the set of buds was light the flowers appear to be normal; in certain fields, however, Rancocas set a goodly number of buds but only those on the lower shoots and laterals are blooming. The others are now very much retarded and probably will not produce a crop. We have been hoping to get a few more pictures of the mummy-berry disease this spring but it is extremely hard to find."

He had written earlier: "The injury to the Cabot buds occurs rather generally. A certain amount of discoloration has appeared in the buds of some other varieties but it is impossible to tell at present whether this will result in an appreciable reduction in the crop. There is an inclination on the part of some growers to attribute this discoloration to the low temperature of April 12th, but in a good many ways it differs from the usual manifestation of frost damage. For example, there seems to be no greater proportion of discolored buds near the ground than on the tips of the bushes, and tender vegetation nearby is generally unhurt....

"We have been much interested in the work of Dr. Kunkel, of Rockefeller Institute, who found that the virus of peach yellows could be killed within the tissues of peach twigs without injury to the peach buds. We have under way an experiment to see whether similar heat treatment will inactivate the false blossom virus in dormant cranberry tissue. We hope to repeat the experiment later with growing material and, if practicable, with viruliferous leaf hoppers. Five years ago we submitted healthy and infected dormant cranberry plants to gradual and controlled dehydration and were able to find a point at which 90 percent or more of the infected vines were killed while about the same percentage of apparently healthy vines recovered. Because of the difficulty in telling in practice when this point is reached, we were not able to put the information to practical use in the treating of vines for planting. Moreover, plants in an early stage of infection appeared to be as resistant as uninfected plants which had been weakened from some other cause. If it should be found that the virus can be inactivated without injury to the cranberry tissue it would not only be of practical help in sterilizing planting stock but would probably help to explain some of the inconsistencies that Mr. Bain has noted in the progress of false blossom in the plant."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman, vegetable crop investigations.

"Very satisfactory results have been obtained this year in sweet-potato bedding where a 1-inch deep pine straw mulch has been used over the potatoes after the roots have been covered 3/4 to 1 inch deep with sharp sand," he reports April 23d. "We have found by bedding the potatoes between layers of sand, wetting down good, covering with pine straw, and finally covering the beds with sash, we obtain plants just about as quickly as where stable manure has been used in supplying bottom heat. In other words, it seems that the pine straw has much merit in holding moisture and reduces the necessity for constant watering, thereby maintaining a more even temperature....

"The weather was cloudy practically all week, with continued rains. The rainfall for the week was 4.96 inches. The total for the month has reached 17.48 inches thus far. Maximum temperatures for the week ranged from 81° to 69° F., and minimums from 64° to 49°. A late frost on Sunday, April 10, in the morning, with a minimum of 32°, did considerable damage to vegetables and tender fruit blossoms. Beans were killed entirely in some places. Grape blossoms were severely injured. A few unfolding tips of pecan shoots were injured but not seriously enough to injure the trees.

"The two tung-oil trees, the terminal buds and shoots of which were frozen during the winter, have surprised us by forcing new growth which has put on a few blossoms. There is a prospect of a moderate crop of nuts on the 15 tung-oil trees at the station."

N. H. Loomis, small fruit investigations.

"The loss of grapes due to frosts the week-end of April 16th increases from day to day. Clusters which appeared normal or with slight damage have hung on the vine and opened their flowers in a normal manner, but then absciss. This not only further reduces the crop prospects for the year, but also makes the grape breeding work difficult.

"Excessive rains during the month practically ruined the strawberry crop in this vicinity. In many places, including the station planting, the water not only rotted the ripe fruit but also the green fruit and the blossoms. To date, eight cars of very poor fruit have been shipped from this district, and the season is nearly over. A year ago, approximately 30 cars were shipped. The acreage this year was increased considerably over that of last year. The strawberry plantings which were made this spring look unusually good so that growers are looking forward to next year's crop."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"We have noticed this year a greater number of pistillate flower clusters with stigmas drying without first becoming receptive and a small number of these clusters have been tagged for observation," he writes April 30th. "As yet we do not know to what this condition may be due, but think that it may be associated with cold injury. The condition is not of sufficient extent to be serious."

Writing April 23d he said: "As yet very little scab infection has been found at Philema on the trees in the station orchard. The Schley trees have a very heavy bloom all over this orchard but the Stuart bloom is somewhat spotted, some trees showing a very heavy bloom while others have no bloom, or very light bloom. As a whole the Stuart bloom is the heaviest yet seen at Philema....A very heavy bloom on chestnuts is present this year. Nearly every tree is loaded with catkins and pistillate flowers and if the set is as good as the bloom it is a guess that we will have to do a considerable amount of propping this fall.

"The damage done by the May beetles to the topworked trees at Philema has not proven as serious as we first thought it might as the trees are beginning to make good growth again. The original flush of growth was lost and we expect less than normal total growth this year as a result. It is possible that some of the weaker trees may die...."

"Depending on the location, age, and condition of the trees from 50 to 100 percent of all Moore catkins have shed their pollen at this time," he wrote April 9th. "Except for Schley and Stuart most other varieties are similarly advanced. However, there is no definite evidence yet to indicate that pollination has occurred on any varieties except Frotscher and Pabst....We have what appears to be the best Schley bloom at the U. S. Pecan Field Station at Philema, that has yet occurred. On most trees, regardless of treatment, most of the shoots are blossoming. The trees of the Stuart variety are not yet sufficiently developed to show what the variety will do this year but there are indications of a heavier than normal bloom."

A. H. Finch, Tucson, Ariz.

"The past winter has been one of the warmest in the history of the Southwest," he writes April 16th. "Evidence of its effects on foliation of fruit and ornamental plants are apparent. On April 7 and 8 pecan trees at Yuma which are normally in leaf have buds only starting to swell. Records of pistillate receptivity and pollen shedding have been kept for individual trees on the experimental farm since the trees first blossomed. These will be most interesting this year. This is the first year that visible evidence of incomplete rest period has been present. If the present thought that incomplete rest is a factor in the dropping of young nuts is correct, this year should be marked by a heavy drop."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"As it turns out, practically no orchard has been cultivated at all and with the rain that is now coming it is doubtful if any orchard can be cultivated for some time to come," he writes April 16th. "Most of the growers are now calculating that it will be the first of May when they will start turning under their cover crops and if this weather continues it will be still later. While cover crop material and such is growing slowly, the development of fruit trees is very slow. The weather is just cool enough to hold back most of the bloom, especially with walnuts."

He had written earlier: "It is more evident than ever that it is an individual soil problem as well as a crop problem, working with cover crops. On some soils we have had tremendous increases in the cover crop from the use of fertilizers. In other cases we have so stimulated the native vegetation that the cover crop vegetation has been completely killed out and then the native vetch has died. For instance, in one place chickweed choked out all the cover crop, matured and died, so that at the present time there is not one bit of green material on the plot. In another place the annual bluegrass formed such a solid sod that no cover crop grew. The amount of organic matter produced by the blue grass is more or less negligible. In another place rye grass choked out practically all the oats and vetch and we had nothing but the native vetch. In still another locality on one soil the responses were according to the fertilizers applied. In two other places in that neighborhood only one fertilizer gave any responses at all, while the others were complete blanks. The marvel of it is why nitrogen, either spring or fall application, failed."

Paul W. Miller, Corvallis, Oreg.

"Preliminary results of studies on the time of filbert blight infection were taken during the week ending April 16th. Results of these studies seem to indicate that the buds are susceptible to infection practically the whole year around as infection of buds occurred from inoculations made at approximately monthly intervals from June 1, 1937 to February 15, 1938. However, the most critical part of this period of blight susceptibility is apparently the interval from June 1 to January 1, for infection taking place during this interval caused the death of a relatively large percentage of inoculated buds and opening shoots coming therefrom. Inoculations made after January 1, 1938 resulted in comparatively few infections and disease development was not anywhere near as extensive as inoculations made in the late summer and fall.

"Fruit and nut trees continue to develop rather slowly due to continued cool temperatures."

NUT INVESTIGATIONS

C. L. Smith, Austin, Tex.

"During the week ending April 16, the turning under of cover crops on the Brownwood station was begun. The yield of oats and rye is excellent this year. Cover crops in plats at Wharton were in good condition and the yields are good. Especially promising is Huban clover, which was tried for the first time this year.

"The freeze during the week ending April 9th did little damage to pecans although the temperature dropped to 34°F. on the 10th and a fairly heavy frost occurred. Corn was damaged seriously and cotton was completely killed. Farther north, in some sections, a great deal of damage was done by the cold. At Brownwood all new shoots and swollen buds were killed and in many instances the bark was split on older wood."

F. N. Dodge, Robson, La.

"With Schley and Stuart pecans we find twice as many pistillate blossom clusters per tree on the trees given summer cultivation and winter legume than there is on the trees growing in Bermuda sod," he writes April 25th. "Also, there is no doubt but that the drop due to abscission will be much greater on the trees growing in Bermuda sod than it will be in the cultivated trees. When all factors are considered, it is quite possible that the yields in pounds per tree will be four times as great on the cultivated trees this fall as on the Bermuda trees."

ADMINISTRATIVE NOTES

Travel Paragraph 47 of the Standardized Travel Regulations, as amended, approved by the President January 30, 1934, and December 10, 1935, provides as follows: "On vessels.--On vessels where the price of passage includes meals, per diem in lieu of subsistence on shipboard will be allowed if specifically authorized. (Gratuities to Government employees will not be allowed.)"

"As the rates of the per diem in lieu of actual expenses for subsistence authorized by law represent the maximum rather than the minimum allowable, it is the responsibility of the heads of the department and establishments to see that travel orders authorize only such per diem rates as are justified by the nature of the travel," says a memorandum of April 25, 1938, from the Office of the Secretary. "Accordingly, in order to secure uniformity in Department policy, it has been administratively determined that $3.00 per day is the maximum amount which may be allowed an employee of the Department as per diem in lieu of subsistence while on shipboard where the price of passage includes meals. Careful consideration would be given the facts in each case as to the allowance to be authorized, if any, within this limitation."

ADMINISTRATIVE NOTES

Automobile Accidents — In commenting on the accidents and fatalities occurring in connection with work on Department projects and activities during the last six months of 1937, the Director of Personnel emphasizes the fact that a large number of the accidents appear to have been the result of excessive speed of passgener cars and trucks. This means that we need a lot more cooperation in the Department's safety program.

Paragraph 1832 of the Department Regulations states that "Drivers of all departmental vehicles shall strictly observe all State and local laws and regulations both in letter and spirit." Every employee, especially those in a supervisory position, should see that this regulation is strictly observed.

Remember, too, that an employee of the Department is authorized to operate a Government motor vehicle only where a Department motor vehicle operator's permit has been issued to him. This applies to all of our workers, whether employed under appointment or hired under letters of authorization. To obtain such an operator's permit the employee must have at all times adequate liability insurance. Is your insurance still in force?

Reinstatement, Transfers, etc. — "The Civil Service Commission has advised the Department that hereafter a candidate who fails in the first noncompetitive examination given him, whether for transfer, promotion, reinstatement, or other change in status, or for classification, will be permitted to take a second examination on the request of the Department of Agriculture provided that a period of six months has elapsed since the first examination, during which period the employee, if in the service, has continued to render satisfactory service," says Personnel Circular No. 62 of April 19, 1938. "Additional examinations will not be permitted more often than once a year.

"The above regulation was considered as effective on and after March 15, 1938; however, the Civil Service Commission has decided that in all cases where a first noncompetitive examination was requested or accorded prior to that date, a second examination may be requested and accorded without regard to the six months' time limit established above.

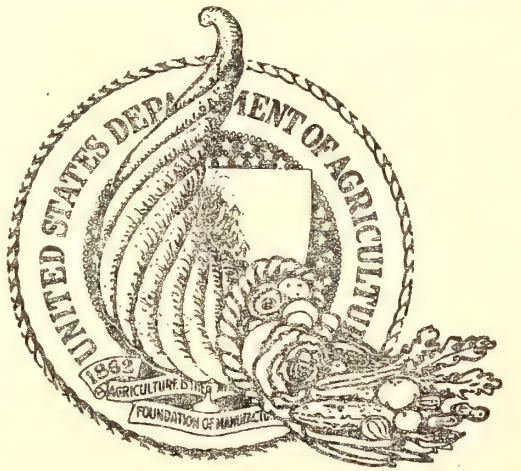
"The Civil Service Commission requires that Civil Service Form 375, properly executed in all respects, shall be submitted with requests for action in the classes of cases mentioned."

Vol. 10 No. 10 May 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D.C., June 1, 1938 No. 11

Potatoes A knowledge of the obstacles that have been overcome in the past supplies much of the encouragement needed for meeting the problems of the present and future. Thus the workers in our section of potato investigations must feel rather optimistic about the future when they look back over the past. The Gardener's Chronicle (London) tells us for example, that there was a time when the French Government received thousands of petitions urging the suppression of the culture of the so-called "Irish" potatoes. One of the charges against the potato was that it caused leprosy!

Battling such prejudices, the potato has risen from zero in 1719 to a yearly production of 400,000,000 bushels in this country, with the annual world production passing the six billion bushel mark. We need no longer persuade people that the potato is a valuable food. Now we are concerned with stabilizing production to make sure that adequate supplies will be available at reasonable prices. This has come to mean primarily a battle with diseases. Knowing that the manifest difference in disease resistant among various sorts must have a genetic basis, potato breeders are working with confidence to produce disease-resistant varieties of satisfactory commercial quality.

While doing this, we are giving another splendid demonstration of the importance of team work in research. We have needed the help of the plant introducers in bringing in potatoes carrying the genes of disease resistance. We have needed the aid of the specialists in home economics in connection with cooking tests. The plant breeders and horticulturists have made the crosses and grown the progenies, while the pathologists conduct the studies necessary to secure information on disease resistance. And when promising new sorts are obtained, we enlist the aid of the State stations in giving them a practical test as promptly as possible under a wide range of climatic and soil conditions.

EXPERIMENTS MAY HELP SOLVE RIDDLE OF GROWTH SUBSTANCES

Under this title the Department's Press Service distributed to newspapers on May 10 an excellent summary of investigations conducted by our colleague, Dr. William C. Cooper.

"When cuttings of many plants are treated with a suitable solution of one of the recently discovered growth substances or plant hormones, they grow more roots and grow them more quickly than untreated cuttings. Plant scientists accept this as a fact, but they are still puzzled as to how it happens.

"William C. Cooper has opened new lines for investigation by reporting a series of experiments which throw new light on the problem and indicate that the real root-forming substances are already in the plant and not in the treatment.

"Several chemicals are known to promote rooting. Cooper used indole-3-acetic acid, one of the first chemicals identified as a growth substance. He treated lemon cuttings--soaking the base of each cutting in a solution of the chemical--planted part of them, and got the anticipated response--more and stronger roots than from untreated cuttings. Part of his cuttings he did not plant. Instead he cut off the treated base sections and again treated the shortened cuttings. The second treatment did not stimulate nearly so much root formation as the first treatment.

"Doctor Cooper says that the probable explanation of these conflicting results is that the chemical treatment causes the downward transport of naturally-occurring root-forming substances which are already in the plant and which are necessary for root formation. For convenience in the discussion of these substances, they have been named rhizocaline.

"A 20-hour treatment of lemon cuttings apparently drew down about two thirds of these substances and concentrated them in the base. In a 40-hour treatment the rhizocaline movement was practically complete. If the treated base was cut off after 20 hours this removed about two-thirds of the rhizocaline and a second treatment resulted in some root formation. But after a 40-hour treatment had concentrated practically all of the rhizocaline in the base, shortening the cuttings removed practically all the rhizocaline and the second treatment did not promote rooting, even though the cutting absorbed the indole-3-acetic acid.

"Cooper's experiments with various other plants indicate that plants which do not root readily when treated--Delicious apple cuttings, for example--are lacking in rhizocaline. The chemical nature of rhizocaline has not been discovered."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"The Apple Growers Association mixed up a batch of the copper-phosphate-Bentonite-lime mixture which was placed with several growers in the bad scab areas for a preliminary commercial trial," he reports May 1. "They appear to be well pleased with its characters. It certainly gives them a chance to check on their spray methods since the material gives a beautiful coating and unsprayed portions can be seen at a distance. If scab control is satisfactory, I will feel that this office has made one good contribution to the local fruit industry.

"Boron applications on pear trees showing thepitted fruit condition were completed on April 19 when a few Anjou trees were sprayed at Parkdale. This concludes quite a comprehensive series and it will be interesting to observe the trees throughout the remainder of the season.

"Anjou twigs were collected this spring showing what appeared to be active anthracnose cankers. Isolations from the material, however, yielded pure cultures of a bacterial organism which grew very readily on media ordinarily used for fungi. It is planned to do some work with this as soon as the rush season is over. While not a widespread disease, locally, it seems desirable to know its pathogenicity and identification."

G. A. Meckstroth, Willard, N. C.

"During the past week I have followed up the picking in our experimental spray plots and have kept up with the study of the effect of spraying on cap condition, yields, berry size, black seed and rot," he writes from the Coastal Plain Station on May 7th. "The difference between the sprayed and unsprayed plots is still very striking. In the case of the Klondikes in one or two pickings there was only one berry with a good cap per quart in the check plot. Earlier in the season the caps from the check plot were in a little better condition. I have collected plants from all of the sprayed plots for leaf infection records. This is giving us a fine picture as to the effect of spraying on the foliage....The prices paid for strawberries during the last half of the week have been very satisfactory, ranging from $3.00 to $4.50 per crate, mostly around $4.00. At Chadbourn the price during the last week has been very good--up to about $4.50 per crate."

H. F. Bergman, East Wareham, Mass.

"Some of the cranberry bogs are still under winter flowage. On some of these the water will be held until about May 20. On others the water would have been let off before this but the growers do not have a sufficiently large supply of water to last through the frost season and are holding the water until the weather becomes a little warmer."

DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

"Following a very favorable blossom period, the initial set of all varieties is very good," he writes from the U. S. Pear Field Station on May 11th. "On the station orchard, a few trees which were allowed to suffer rather severely for moisture in 1937, have a light initial set, but everything else is heavy. The initial set on the unpruned Anjous in block 4 is lighter than for the moderate or heavy pruned trees but these trees have plenty of fruit for a crop so far. It is going to be very interesting to observe the influence of fairly heavy applications of nitrogen on the June drop of these trees."

He had written earlier: "A few years ago Mr. F. C. Reimer announced that he had a seedling pear tree (Old Home), which made a good trunk stock and was very highly resistant to blight. He recommended that this trunk be budded on a highly resistant root and after three or four years the desired variety be topworked in to the secondary branches of the Old Home. These recommendations were made without a very thorough (if any) testing of the combination in the field. As a result, it was not until after several fairly large plantings and many smaller ones had been made that it was discovered that the Old Home trunk is very susceptible to a mysterious canker. The canker was examined and pronounced European canker by Zeller of Oregon State College. It was also examined and pronounced a 'Phytophthera rot' by some pathologist from California. Most of the growers and Mr. Reimer accepted the second diagnosis and as a result Mr. Reimer recommended a bordeaux spray in the fall as a control measure. Other varieties are attacked by the canker but to a lesser extent than Old Home. The canker seems to attack trees which are in a weak condition, especially trees growing in soil with a high water table....

"Mr. Nattkemper has been working on this since his arrival and has found a bacterim present which greatly resembles the organism causing bacterial gummosis of stone fruits. It appears rather definite now that instead of being either European canker or a Phytopthera rot these cankers are Blast cankers, caused by a species of Phytomonas. These cankers have been very thoroughly described and discussed by Dr. E. E. Wilson in Hilgardia, vol. 10, no. 8, November, 1936."

George F. Waldo, Corvallis, Oreg.

"Weather during the week has been quite warm with no rain," he writes for the April 25-30 period. "Strawberries are coming into full bloom and it is evident that the season will be considerably earlier than last year, probably some berries ripening by May 15.

"Reports indicate that strawberry plants throughout the valley are in very good condition, and with good weather during blooming season it is evident that the crop will be large."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga. May 9, 1938.

"Three cars of Mayflower peaches were shipped from the Fort Valley section this past week, and about 20 more cars are expected by the local ice plant to be loaded this week. Quite a few growers have expressed the opinion that because of poor quality the very early peaches only serve to injure the market for the later ones, and that a person who buys Mayflower as a typical Georgia peach is through with Georgia peaches for the rest of the season. However, as long as growers can get $3 per bushel for them, Mayflower will continue to be grown. The Uneeda variety is expected to start ripening next week, and gradually the quality of fruit shipped from Georgia will improve, as later varieties ripen...."

He wrote May 2: "The first peaches of the season from Georgia were shipped April 28th, from an orchard near Fort Valley, and consisted of a few crates of Mayflower. The first carload is expected to be loaded this week....The Georgia Peach Growers Exchange released an estimate last week of 9680 cars of peaches from Georgia this year. If it materializes it will be the largest crop since 1931, and about 1500 cars more than the 1933-36 average. The estimate by varieties is Mayflower 66 cars; Uneeda 185; Early Rose 880; Hileys 2,675; Belle 285 and Elberta 5,359. It is expected that each variety will mature fully two weeks earlier than usual, and the shipping season will be practically over by July 15.

"Bacterium pruni is becoming serious in some of the commercial Early Rose and Elberta orchards in this section. In the variety block at the laboratory Valiant and Veteran trees are being seriously defoliated; and in a way the infection will serve a good purpose in that it will help to establish the resistance of new varieties to the disease. The USV's continue to be resistant, as is their parent Hiley."

VEGETABLE INVESTIGATIONS

H. Rex Thomas, La Fayette, Ind.

"On May 11 and 12 severe frosts throughout Indiana killed 80 percent of the canning tomato acreage transplanted at that time," he reports May 19th. "Most of this loss occurred in the central part of the State where approximately 25 percent of the intended 1938 acreage had been set out. Practically all growers in the Southern and Northern regions transplant at a later date and hence suffered no loss. Transplanting was farther advanced than usual at this date because of an early spring this year. Several rainy days following the freeze have prevented an immediate resetting of the damaged fields. Open seeded plants for late season resets were not injured."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"The Wenatchee fruit district has experienced a spring season which approximates closely the normal in regard to weather conditions," he writes May 13th. "At no time has the temperature dropped to a point where blossoms or young fruits would be injured, except in a few of the frostiest districts where firing was necessary for two or three nights.

"The set of apples in the district generally is good. In the Wenatchee district proper, April 29th and 30th were ideal for pollination and practically all pollination took place at that time. In certain orchards between Monitor and Cashmere, however, the pistils were not receptive on the 29th and 30th. The following week turned cool and windy, resulting in a full bloom condition of these trees during that entire period. In a few of these orchards the set will not be very great, although I think sufficient for a good crop of fruit.

"The cherry set seems to be very good in all sections; in fact, many growers are afraid that the crop will be too large on many trees to acquire a desirable size. Prospects for a pear crop are also good.

John C. Dunegan, Fayetteville, Ark.

"Conditions in northwest Arkansas continue to favor the development and spread of the apple scab fungus," he writes from the fruit disease field laboratory on May 9th.

"We had two rains storms, one of more than 2 inches, during the week ending May 7th, and below normal temperatures. The scab fungus is flourishing under these conditions and only the absence of fruit saves this year from being a repetition of the 1935 scab disaster. It is true, of course, that if the crop had not been killed by the two April frosts, the growers would undoubtedly have paid more attention to spraying and the disease might not have obtained the 'head start' that it has this season. However, in many orchards the growers have practically abandoned their spray program and considerable foliage injury is anticipated.

"Inoculation experiments with leaves from seedlings of the Amassia apple obtained from Turkey have given negative results with aeciospores from Anemone caroliniana and A. coronaria, as well as with overwintered urediospores of T. pruni spinosae discolor. These results indicate that the rust on Amassia apple, in Asia Minor, Turkey and Greece, while resembling the rust on various species of Prunus, is at least physiologically distinct."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

A. C. Hildreth

"More than 900 chrysanthemum plants were distributed to nurserymen in this region during the week," he reports for the week ending May 7th. "These plants were United States Department of Agriculture numbered varieties introduced by Mr. Mulford, and were distributed to 10 nurserymen throughout the Rocky Mountain-Central Great Plains area.

"Early garden vegetables were being planted by Babb and Kraus, these including Chinese cabbage, turnips, beets, etc. They also started cutting asparagus in the irrigated portion of the depth of planting experiment. We shipped to the Wind River Indian Agency at Fort Washakie, Wyo. 878 pounds of asparagus roots, composed of 265 root, as part of a cooperative test in the culture of asparagus. Smaller shipments of roots were made to the Wyoming State Experiment Farms at Afton and Lyman, Wyo."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on May 14th he said: "Irrigation of the nurseries has become necessary due to the prolonged dry spell. The week brought no rain to us at Philema and the soil is becoming very dry. Sand burn of the nursery trees is extensive and in an effort to prevent further injury from drouth and heat we are hauling sawdust for use as a mulch, planning at the present time to cover one-half of each nursery. We have located an almost limitless supply of sawdust and if a mulch of this material appears to be satisfactory we expect to make much more extensive use of it."

Paul W. Miller, Corvallis, Oreg.

"From all appearances, filbert blight is going to be quite bad this year, as a relatively large number of blighted buds and twigs are now evident in unsprayed orchards," he reports for the week ending April 30th.

"The current epidemic outbreak of blight is apparently correlated with the abnormally wet season of 1937. Many buds in the axils of the leaves were apparently infected during the heavy rains which fell in western Oregon in June, 1937, as artificial inoculations made during this period caused abundant infection of buds. The disease did not become evident, however, until March and April, 1938. Considerable infection also occurred during the wet fall of 1937."

NUT INVESTIGATIONS

C. L. Smith, Austin, Tex.

"During the week yield records of the vetch and rye cover crops at Granbury were taken," he writes May 7th. "These plats are on a heavy silt clay soil which has been deposited largely by overflows from the Brazos River. The land is fairly flat and there is not a quick run-off of water rains. The rye has done well on these plats in both years it has been grown but the hairy vetch has not made satisfactory yields. The vetch this year apparently was adversely affected by too much rain. A large number of the plants are dead and all of the leaves are dead nearly to the top of the plants. The vetch was better on the ridges than on lower ground, which indicates that it probably suffered from too much water. In the orchard adjoining our plats the oats are very fine and if allowed to mature should yield at least 85 bushels of grain to the acre. These were planted early in the fall. Barley also made good growth on this land, but it was in the early dough stage when the freeze occurred on the 7th and 8th of April and the blossoms were killed. It is reported that early wheat in this and other areas went the same route....Unless some legume other than hairy vetch is found to yield heavily on this land, it will probably be found profitable to use small grains as cover crop plants. Huban and yellow flowering sweet clover will be tried next year."

He had written late in April: "The cold weather during the first of the month apparently did not damage to the pecan flowers, but seems to have delayed their development to a slight extent. There is a heavy bloom on all varieties in this area, and also good prospects for a heavy infestation of the nut casebearer."

ADMINISTRATIVE SPECIAL!

Vouchers We have just received word from the Bureau's Accounting Office that a new system of accounting for the Bureau will be installed as of July 1, 1938. In order to work up this system it will be necessary for us to have additional copies of vouchers, beginning with the first voucher you prepare after reading this notice. Copies should be furnished as follows:

1034 vouchers.....1 white original
2 yellow carbons

Expense Accounts (Form 1012).....1 white original
2 yellow carbons

(Continue to send same number of other forms accompanying expense accounts)

Pay Rolls (Form 1013) .....1 white original
1 white carbon copy
2 yellow carbons

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

Writing from the U. S. Pecan Field Station on May 16th he says: "A fairly careful check has been made of the trees sprayed last year and those which were not sprayed and it seems as if the sprayed trees have almost as many pecans as they should carry on the portion of the tree which was sprayed last year.

"As I have indicated in previous reports, we were unable to reach the tops of the trees last year and the tops lost most of their foliage early in the Fall. There does not seem to be a very heavy set of pecans on that portion of the trees. Trees not sprayed last year have from one-third to one-half as many pecans set as the sprayed trees. Practically the only Stuart trees in this orchard which have set a crop of pecans are on those trees which were sprayed last year in this block or in Mr. Parson's experiment."

F. N. Dodge, Robson, La.

"Spraying has taken nearly all our efforts this week as it did last week," he wrote May 16th. "Sometime has been spent in removing the covers from the clusters used in the breeding work and in looking for eggs of the nut case-bearer....This year tobacco dust was blown into some of the covers a day or two after the pollen had been applied. Clusters so treated had no larva when opened, and no ill effects of the dust have been observed as yet, except that the dust caused the stigma to dry more rapidly than normal. The clusters treated showed signs of insect injury at the time the dust was applied; so that I am certain that the treatment saved the nuts from being destroyed."

John R. Cole, Albany, Ga.

"I visited at least 10 orchards planted to the Schley variety and in every place where the grower has not sprayed for this disease, the scab infection is more severe than it is in the vicinity of Albany," he writes from the U. S. Pecan Disease Field Laboratory on May 14th. "During the month of April approximately 10 inches of rain fell over a period of about 20 days in the above localities and that is the chief reason for such a heavy scab infection. Those growers that made the pre-pollination spray application obtained excellent control of the scab disease.

"There will be at least four cooperative machines being used north of Albany this year and it is going to be interesting to see how well the growers will be pleased with this new venture. They were very much pleased at Americus last season when five growers used on machine."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffmann (Vegetable Crop Investigations)

"A heavy infestation of melon lice developed in the greenhouse almost over night," he reported for the week ending April 30th, "and the potato plants got more than their share; however, it is thought that no harmful effect will result.

"A word to the wise! Spirea is a very beautiful plant but might well be planted as far away from the greenhouse and plant ranges as can be conveniently planted, because plant lice certainly are at home on spirea and it is a great temptation to shade incoming and outgoing plants under the spireas, with the result of getting heavy infestation of lice in the greenhouse.

"Intense heat has to some extent lowered the quality of our asparagus. Spear growth is very loose, unattractive, and naturally of low quality.

"Reports from the Crystal Springs trucking section would indicate that the bottom has absolutely fallen out of the cabbage market. Very high quality beans are coming in from South Mississippi. Irish potato growers in this section are generally much concerned over the crop outlook as well as possible unfavorable prices."

N. H. Loomis (Small fruit investigations)

"The week was taken up entirely with grape breeding work. The blossoms continue to open and shed without setting fruit, as a result of the frosts of April 9 and 10. At the present time it appears that little of the grape breeding work will be successful and that less than 25 percent of a normal grape crop will be made.

"A total of 9 cars of strawberries were shipped from the Marion district this season. A normal crop would have been approximately 45 cars. This difference is due to the unfavorable weather conditions at harvest time."

J. M. Lutz (Fruit and vegetable storage and utilization studies)

"The strawberry season in Louisiana is practically over (April 30). Slightly over 2300 cars were shipped this year as compared to 3333 cars in 1937."

Maximum temperatures during the week ending April 30 ranged from 77° to 87°F., and minimum temperatures from 58° to 61°. There was no rain and very little cloudiness. Long hot days, with burning winds, caused covercrops to about reach their peak.

ADMINISTRATIVE NOTES

Local Holidays

"I'm thinking of going to the Riviera for the season," said the wife. "How much would it cost?" "Nothing," said the husband, promptly. "Nothing?" echoed the wife, puzzled. "No," explained her husband readily, "thinking about going will not cost you anything." On the other hand, of course, thinking about things will often save you money. That's what a certain station superintendent found out when he reported that he had excused the station workers from duty when the mayor of the town proclaimed a local holiday due to the opening of the racing season. Now he's collecting leave slips from the men.

There is nothing in law, you see, permitting us to authorize the closing of a Government office or the excusing of Government employees from duty on local holidays. The annual leave regulations provide only for Sundays, legal holidays and holidays declared by Executive order; local holidays are not included unless specified by Executive order. If an employee is excused from duty on a local holiday, the absence must be deducted from his annual leave. An exception is made, of course, where the local holiday prevents the employee from working--through closing of the building in which he works, etc. Unless local celebrations or observances of holidays involve the closing of buildings occupied by Department organizations, or the withdrawal of other facilities essential to the performance of official work, such occasions do not constitute acceptable justification for excusing of the personnel.

Servicing Office Machines

The Procurement Division of the Treasury Department is to ask for bids for repairing and servicing adding, accounting, check writing machines, etc. in the District of Columbia. Contracts, therefore, should not be entered into for such service in the District. With reference to field activities, it is suggested that contracts be delayed until the Procurement Division advises us as to the terms of the contracts let by it. For its information and guidance, it will be appreciated if activities which have maintained records of the cost of servicing types of office machines, will furnish us information concerning types of machines, age, annual service cost, and whether the machines were serviced under a general maintenance agreement or under an arrangement providing for service whenever needed.

Radiator Furniture

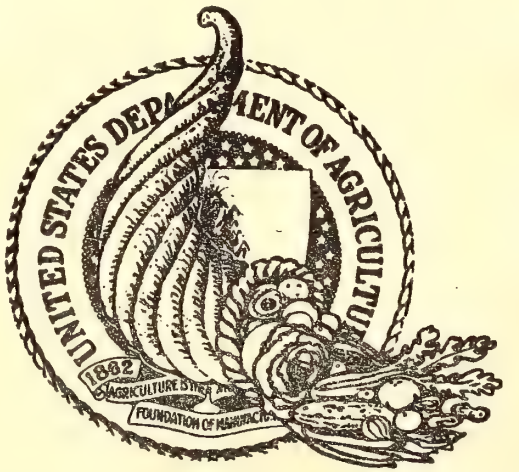
We have a Congressional request suggesting that we solicit bids or quotations from Mr. John W. Shirley, 330 E. St. Joe Street, Indianapolis, Ind., for requirements included under gas cabinets, radiator furniture and steel equipment. If you have occasion to request quotations on equipment of this nature, Mr. Shirley should be given an opportunity to submit a bid.

Vol. 10 No. 11 June 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., June 15, 1938 No.12

Apples A small clothing store used as a sign and trademark the picture of a large red apple. A customer suggested that the emblem had been selected because of its possible appeal to the farmers and fruit growers in the surrounding country. "Not at all," denied the proprietor. "It's a symbol of gratitude. Think back to the Garden of Eden and what happened there--and tell me where the clothing business would be today if it hadn't been for the apple!"

Color is an important factor in the sales appeal of fruit and the red apple has been a leader in demonstrating that fact. Commercial organizations have come to recognize that the apple represents an amazing combination of selling appeal factors. It is good to look at, good to smell, good to eat--and worth eating. Taking their cue from it they have found that they can often increase sales merely by making a product more attractive. An outstanding illustration of this is the experience of the manufacturer of portable typewriters who nearly doubled his sales merely by putting out models in different colors, without any other change in materials or construction!

As to the food value of the apple, the late Bob Adams said: "To regulate the human gizzard, and all man's frame from A to Izzard, the good red apple is a wizard. To eat each day a juicy pome, will keep the doctor from your home. So shed your nightshirt, rise betimes, and pick yourself a Golden Grimes. No more, I ween, will old Doc Green, come romping up in his machine, all set to amputate my spleen. No more he'll jab, with hand expert, to find the spots he knows will hurt. No longer overwork his brain, and all its fine ball-bearings strain, determining the diagnosis before he tells me what the dose is. Instead of pills of varied size, I'm eating Winesaps, Yorks and Spies. And you, I hope, will follow suit, and fill yourself with wholesome fruit!"

Not long ago the newspapers published a picture of Dr. John Harvey Kellogg, the noted food authority, showing him at the age of 86, keeping fit with his rowing machine--and apples. Dr. Kellogg has long been an enthusiastic friend of the apple. "Scientific observation has proven that of all foods the apple is the one best for reducing acidity and introducing needed alkalines into the system," he once insisted. "Their free use is an excellent means of combating biliousness or intestinal toxemia, the very condition for the relief of which many people, to their detriment, swallow pills, mineral waters, calomel and other drugs, the habitual use of which does enormous harm... Most headaches are due to intestinal toxemia. Apples put an end to them by removing the cause. Children are benefited by the free use of apples, which are rich in vitamins and aid materially in developing sound teeth." To quote is not necessarily to endorse all that even so eminent a food authority may have said, but one can say much nevertheless in praise of the apple and still remain conservative.

What we have in mind is that the apple is better fitted than most horticultural crops to stand on its own feet. If it needs the aid of the research specialist, there can be no question as to his value to the other horticultural crops. More and more of recent years the apple grower has had impressed upon him the fact that he does need the help of research in battling both direct and indirect competition. The production of apples in this county is now but little greater than it was 35 years ago--and our largely increased population should be using a lot more apples. The apple grower has been forced to admit that oranges offer a direct competition with apples in that when a consumer is eating an orange he is not eating an apple! Now comes another shock in the realization that ice cream has become an active competitor, believe it or not! A few years ago apple pie was not only the favorite American dessert; it actually made up more than 50 percent of the dessert orders. Now ice cream ranks first.

The apple grower has been forced to accept that fact that the man who used to make a path to the home of the person who made a better mousetrap, is not showing the same degree of interest in the apple. It is not enough for the grower to produce apples of superlatively fine quality. It is not enough, even, to get these to the consumer in perfect condition at a fair price. No. the grower is facing the fact that he must emulate the hen and cackle when he has laid an egg, though the word is really "advertise," not "cackle."

The research specialist is putting his shoulder to the wheel, so that apple production has been pushed up from 1.02 bushels per tree 35 years ago to 1.64 bushels or more now. More attention is being paid to the location of the orchard and the planting and care of the trees. The apple growing industry is being concentrated in the hands of experienced fruit growers who devote their full attention to the production of fruit. And handling and transportation problems are being given close attention--and need it.

DECIDUOUS FRUIT INVESTIGATIONS

Apropos the need of the aid of the research specialist in connection with apple growing, there is an old riddle that inquires: What is it that has four legs, stands in a barn, and can see equally well from both ends? The answer is: "A blind horse." A really pressing need is something that will enable an animal that has two legs, man, to see ahead as well as behind. For instance, there is an apple grower near Springdale, Ark. who didn't see very far ahead, and just now needs no argument to convince him that the aid of the research specialist is vitally important. We'll let Mr. Dunegan tell about him!

John C. Dunegan, Fayetteville, Ark.

"On Tuesday, May 17, I visited an orchard near Springdale which had the largest crop of apples I have seen in the district this season," he writes. "Having escaped the effects of the two frosts in early April, however, the owner of this orchard proceeded to 'take a chance' with the scab fungus, and omitted the cluster bud and calyx sprays.

"At the time of my visit the Delicious variety showed practically 100 percent scab on the fruit and every leaf showed scab lesions. The Grimes trees were not as severely affected, but even on these a very high percentage of the fruit was affected. Several Springdale growers estimated that the crop would have been worth at least $3,000,00 this year, but at present it is doubtful whether the apples will be of any value except for vinegar stock. It is estimated that it would have cost approximately $200 to properly spray the 40 acres in the cluster bud and calyx applications."

About strawberries and raspberries:

"According to reports in local newspapers, about 25,000 crates of strawberries have been marketed in Fayetteville so far this season, it was estimated on May 20th. Harvest of strawberries will probably continue most of next week, although the bulk of the crop in this area has already gone out. Most of the berries have gone out by truck. The prices for the first two-thirds of the season averaged about $3.00 a crate; and for the final one-third of the season, about $2.25. Probably two-thirds of the local crop has been handled through the local Farmers Market.

"The first crate of raspberries grown near Winslow Route One was marketed here on Friday and brought $3.10. This vicinity will produce from 300 to 400 crates of berries this season, which is more than usual. It is believed that an even better price may be expected as the larger berries mature and ripen."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"Our biggest headache for the past week has been Golden Delicious apples," he writes May 26th. "We have established thinning experiments in two orchards, the Fewkes Ranch and the Capt. Terry Ranch at Orondo. The trees in these orchards are decidedly biennial and this is the "on year." The set is so heavy that it is almost an impossible situation to thin these trees commercially from an economic standpoint in order to bring back a crop next year. Mr. Fewkes turned in a small crew on May 18, but after two days decided to give it up until after the June drop. Golden Delicious stick so tightly that hand thinning is not possible at this stage of development and we attempted to thin by means of small thinning shears in order to clip entire bunches of fruit.

"Theoretically this should work. However, after checking over some trees thinned by hired thinners, many small clusters were missed and I am doubtful if they have removed enough fruit to bring back a crop for next year. I thinned one large tree to about 30 leaves per apple and it took me 12 hours to complete the job. On the Capt. Terry Ranch at Orondo some of his trees are only 8 years of age and yet they are biennial. This is the first time, I believe, that I have found an orchard that was decidedly biennial with trees of this age. It does not appear that it is due to poor vigor as they are making fine growth and have a relatively good leaf area considering the enormous crop that is set for them. We have experimental thinning at the Terry Ranch on both 8- and 12-year-old Goldens. In spite of the high cost of such thinning, Capt. Terry is convinced that it must be done in order to break up this biennial tendency and he is spending a large sum of money to do it. I have estimated that it will cost him from 5 to 10 cents a box for thinning this year. They are using thinning shears at the Terry ranch.

"The problem is further complicated by the fact that at both of these orchards the Golden Delicious are interplanted with Red Delicious and the latter are now just as biennial as the Goldens, due of course to the necessity of cross pollination on the red type. At the Fewkes Ranch the Delicious trees are set almost as heavy as the Golden Delicious. Fortunately the Delicious can be thinned readily by hand.

"I visited the old Golden Delicious trees at Orondo last year, owned by the American Fruit Growers, which were the first trees grafted over to that variety. These are very large trees and are decidedly biennial, the only difference being that these older trees exhibit the biennial bearing tendencies on individual main leaders on the tree rather than the entire orchard as in the case at the Fewkes Ranch. In general, I believe it can be safely said that under our conditions here Golden Delicious is just as biennial as Yellow Newtown and possibly a little more difficult to correct.

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley (continued)

"The Delicious trees at Ribbon Cliff orchard which were biennial three years ago have again come back with a fine crop of fruit. The field men who visited this orchard a few days ago was alarmed for fear that the crop was too large and that the trees might revert again to alternate bearing. However, on my visit to this orchard I found that although the trees were carrying a big crop they were not set in heavy clusters and there is a nice distribution of vegetative spurs throughout the trees so I feel that this orchard will again produce a good crop of Delicious next year."

R. B. Wilcox, Pemberton, N.J.

"The weather was warm during the first four days, followed by a sudden drop in temperature," he writes from the Cranberry and Blueberry Disease Laboratory for the week ending May 14th. "On the morning of May 13th there was a light frost on the uplands with a heavy frost on cranberry bogs and many blueberry fields. The temperature was not quite so low this morning. There were showers from the 9th to the 11th but no large amount of precipitation.

"The winter flowage is usually withdrawn from most cranberry bogs here about May 10, but with a cold wave in prospect practically all growers delayed drawing until the present danger from frost should be passed. On the morning of the 13th the temperature fell to 21°F. at Whitebog and some other places. Most of the drawn bogs were partly reflowed for frost protection, but there was undoubtedly considerable damage, which it is impossible to estimate at the present time. We know of serious frost damage to blueberries in three fields as a result of the low temperature on the morning of the 13th. It has not been possible as yet to estimate the extent of the loss but the crop will certainly be reduced at least slightly. A still more serious feature is the probability that many berries will be touched with frost on one side, making a lot of imperfect fruit which it will be very hard to sort out at picking time. The showers of this week have helped blueberry growth, but most fields are still in need of a heavy rain."

G. A. Meckstroth, Willard, N.C.

"Dewberry picking will begin in a small way next week," he writes May 14th. "There is a very heavy set of fruit--I believe heavier than it has been in the last few years. The Cameron dewberry developed by C. F. Williams of the North Carolina Experiment Station appears to be slightly earlier maturing than the Lucretia.

"The Septoria leaf spot is the only disease to be seen in the dewberries at this time."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"With our rainy season practically at an end," he writes May 28, "our rainfall total for the season at Fresno station now reads 17.70 inches, which is nearly twice the normal yearly average. Weather Bureau records report that on April 30th the average depth of snow at high elevations in the Sierras was over three times the usual amount. With the above normal rainfall and the excessive run-off from the mountain areas, the underground water level has been rising and now stands at 5 feet 1/2 inch from the soil surface. This is closer than the water level has been for 25 years in this section. Pumps are in operation in the basements of the various buildings on the station grounds in order to keep out the seepage water. While the high water level at the station means less irrigation will be necessary, other sections where the water level is even closer to the surface are suffering apparent injury to trees and vines... Temperatures of 100°F. in the shade during the past several days have increased the run-off in both the San Joaquin and Kings rivers."

C. F. Kinman, Sacramento, Calif.

"Present indications are that there will be a heavy crop of pears in all pear-growing districts around here," he wrote Dr. Cullinan April 28. "Floods and high water table in winter and spring seriously injured a number of bearing peach orchards in the Sacramento Valley. Here the trees are gumming badly and there is but a sparse growth of shoots so far and some of the new leaves are turning yellow. These orchards may not survive."

ADMINISTRATIVE SPECIALS

Pay Rolls When typing pay rolls the white carbon should be the last carbon as this is the least important. The Washington Office requires 1 white original, 2 yellow carbon copies, and 1 white carbon copy of all pay rolls.

Financial Statements The last financial statements will reach you about the same time as this issue of the News Letter. We wish to remind you to check all expenditures carefully and send in any necessary amendments to letters of authorization before June 30. Letters may not be amended after the close of the fiscal year. A wire on June 30 asking that a letter be increased may save much trouble later in getting vouchers passed for payment.

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"Count of the pecan clusters and clusters attacked by the case-bearer was made in the cultural plots in the J. Hill Fullilove orchard," he writes from the U. S. Pecan Field Station on May 31st.

"There was considerable variation from tree to tree in the amount of infestation, ranging from 28 percent to 53 percent, with an average of approximately 35 percent of the clusters counted having case bearer damage. Some of this damage was occasioned by the overwintering larva and some by first generation larva.

"Where overwintering larva attacked the cluster usually the entire cluster was destroyed, but in many cases the first generation larva destroyed only one or two nuts per cluster. These counts were made from the ground and it is possible that the amount of damage on the higher branches was not as severe as on the lower branches. Even with the amount of damage done, the trees which had been sprayed with bordeaux mixture the previous year and which were in the thinned block are carrying a good crop of pecans. The trees not sprayed last year do not have more than half the crop. The trees in the unthinned block have practically no crop."

F. N. Dodge, Robson, La.

"About 500 of the clusters in the pecan breeding work were sprayed or dipped with nicotine 155. A check on these clusters shows that less than 1 percent of them have been infested with case-bearer, while frequently as many as 20 percent of the unsprayed clusters on the same tree were in fested."

Howard E. Parson, Shreveport, La.

"There was rain here again May 16th and 17th, this time amounting to more than 2 inches, creating an infection period of over 36 hours duration," he writes for the week ending May 21.

"The effect of this rainy spring is being noticed in the occurrence of vein spot. The first vein spot was seen May 10th. Heavy infection on the blades of the leaflets is now quite general, there is some infection on the rachises of the leaves, and not infrequently infection of the current season's twig growth is seen. This is not a bright outlook, for it indicates that vein spot is very likely to cause considerable premature defoliation by itself.

"Downy spot, leaf scorch, and black aphids probably will add to this menace of premature defoliation before the season is over."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Almonds in the San Joaquin and Sacramento valleys are spotted in the crop this year," he writes May 21. "It is clear that the crop will be very much lighter on the average than it was last year. This was expected because of the almost continuous rainy weather. Furthermore, the clear days were often accompanied by strong winds which prevented the bees from working. Also there was some slight frost but the frost damage has been less this year than the average.

"Recently I went over some orchards where the temperature dropped to 28 degrees on several nights. In a 60-acre orchard in which two wind machines were installed, the crop is very heavy and will average a ton to the acre or better, whereas in adjoining orchards there will be less than 1/3 of a ton per acre. It is clear that these wind machines did an efficient job during this season. It was rather surprising to see the effect of the wind machines. In each case these double propeller machines improved the crop greatly on 30 acres. It is claimed that each machine will handle 40 acres.

"In orchards immediately adjoining the one having the wind machine, the first few rows were apparently affected by the machine and after that the falling off of the crop could be traced across the orchard until there was practically nothing on the outer edge. It would seem from these observations that in this particular instance the machine took care of 40 acres. While the machine must still be regarded as in the experimental stage, there is no doubt as to its value in this instance, and its work compared favorably with that of smudge pots. The grower says that his increased crop will more than pay for the machines this year."

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on May 21, he says: "Records obtained to date show a relatively small drop of nuts, a part of which is being caused by the nut case bearer. There are indications that the drop is increasing each day due to soil moisture conditions, lack of fertilization of the ovule, and the nutritional condition of the trees. Bagged and unpollinated nuts are dropping no more heavily than open pollinated nuts. Trees with a high carbohydrate balance are dropping slightly heavier than trees with a high nitrogen balance. The drop as a whole is general in nature and is probably most closely associated with low soil moisture. At Philema we have had no rain since April 29th and the total rainfall to date since January 1st is almost 10 inches less than the average for the preceding six years....A temperature of 99.5°F. was recorded on Thursday, and the remainder of the week was but slightly cooler. Fairly strong winds occurred also."

VEGETABLE INVESTIGATIONS

B. F. Dana, Corvallis, Oreg.

"At Hermiston we have over a thousand different lots of beans, some of which are duplicated on the plots this year," he writes May 28.

"In addition, we have the cucurbit material and have spread the hybrid beet seed rather generally over the plots as bait for the leafhoppers and also to expose a considerable population of this hybrid seed for elimination of susceptibles. I don't know the exact acreage of our plots there, but I suspect we have an excess of three acres--about one-third of which is covered by the bean planting.

"Every prospect points to a serious curly top year. Mr. Dean put out a considerable number of early tomato plants. Last Wednesday I found two plants showing symptoms of curly top and leaf hoppers were very abundant in some beets growing near the tomatoes. At Hermiston we have observed migrations of hoppers into our plots from May 15 to June 1, depending on the season. I found some hoppers in our plots on May 8. Numbers were stepped-up greatly by the middle of the month. Our open winter and the comparatively favorable spring furnished conditions for abundant growth of food plants for the hoppers. These were still green when I was at Hermiston. The appearance of the hoppers in the plots in large numbers indicates that a considerable spring brood has already matured. Of course, more hopper will mature before the breeding-ground vegetation dries up.

"These conditions are perfect for extensive occurrence and severe injury from curly top for this season in all susceptible crops. Of course, the extent to which the hoppers are distributed will depend somewhat on wind and storms, but we should have fairly widespread distribution. I would not be surprised if the Palouse county and other outlying sections at some distance from the breeding grounds suffered heavily this season. Test plants in our plots should receive severe exposure and susceptibles should be very satisfactorily eliminated. The growers' loss may be our advantage in this respect.

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"We have been adding wettable sulphur in the other plots to control the black aphid and so far it looks promising," he writes June 4 from the U. S. Pecan Disease Field Laboratory, reporting on the third application of spray for control of scab and foliage diseases. "The nut case-bearer and grasshoppers are still getting quite a few of the nuts in our plots. This grasshopper pest is a new one on pecans so far as I have been able to determine. He has been feeding on the lower nut clusters and in some cases has done considerable damage."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

James S. Wiant, New York, N.Y.

Writing from the U. S. Market Pathology Laboratory on May 25th, he reports:

"During the present Florida tomato season, which is now nearing its end, the 'arch-side' lugs have been extensively used. In these lugs the sides project up in a curved manner to conform with the contours of the bulged top. This has apparently effectively reduced cutting and bruising of tomatoes along the sides of the top layer. Decays present have been chiefly bacterial soft rot and phoma rot.

"There has been an increased use of sacks in the recent Florida and South Carolina potato shipments. Numerous samples of floor layer injury have been brought to our attention. Most of it appeared to be transit bruising of a severe type although in several cases there was some evidence of chemical injury.

"California potatoes from the Edison district have arrived for the most part in good condition. Occasional cars have, however, contained from 1 to 3 percent bacterial soft rot. Even this small amount caused extensive wetting of sacks in which the decay occurred. To date no potatoes from the Shafter region of California have reached this market.

"In a recent boat shipment of Texas onions considerable black mold occurred in many sacks that had been wet during transit. In addition many of the onions were stained red from the sacks. Frequently the dye penetrated into the center of the onions. Bacterial soft rot has been the chief decay and it has not been present in more than ordinary amounts.

"Almeria grapes which have been coming in weekly from Argentine have been of increasingly high quality so far as edibility is concerned. Shipments of one week ago and of two weeks ago contained considerable mold and decay--reputedly due to the heavy rains in growing section. The decay was chiefly gray mold. In the shipment of the present week certain lots totaling 2,000 lugs out of 22,000 in the entire shipment showed from 5 to 15 percent of the same type of decay.

"California cantaloups are now coming in in fair quantities. Recent shipments have been of good appearance so far as ripeness is concerned. Earlier shipments contained some that were very small and in some cases rather green. To comply with a recent request we gave a talk on melon research problems before the local Railroad Perishable Inspection Agency last evening. A few of the Philadelphia inspectors came up for the meeting."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

N. H. Loomis, small fruit investigations.

"Harvest records on the Young dewberries have continued to show much heavier yields from the Thornless Young than from the thorny type," he writes May 14th. "The size of the Thornless, however, has been considerably smaller at every picking, running about 20 berries more to the quart. This may be due to the increased yield rather than a variety difference.

"During the week a trip was made to Baton Rouge and Hammond, La. to study the strawberry work there. Some very outstanding seedlings have been developed by the Louisiana station and have shown some decidedly superior qualities over the commercial Klondike variety. Further tests are being conducted before the varieties will be introduced. A chlorosis found both in that section and farther north which was thought to be due to a soil deficiency, was entirely overcome by the use of limestone in sufficient quantities to raise the pH to around 6.0-6.2. Limestone also greatly increased the vigor of the plants and their resistance to leaf diseases as well as increasing the yields tremendously.

"Three northern varieties of blueberries--June, Concord, and Rancocas--were subject to delayed dormancy troubles at Hammond, probably from insufficient cold weather. The growth last summer was very satisfactory but they will probably be of value in the South primarily for breeding work.

Atherton C. Gossard, nut fruit investigations.

"Work on the propagation studies has been continued this week, with long scion grafts and with soft-wood cuttings. An interesting observation on hard wood cuttings of stored wood of the Stuart and Moore varieties, that were placed in the cutting bench a week ago, is that buds of the Stuart cuttings in all treatments and checks are breaking quite rapidly whereas the Moore wood continues to appear entirely dormant. This is exactly the reverse of the order of bud breaking on pecan trees in the field."

Geo. P. Hoffman, vegetable crop investigations.

"Farmers in this section are generally rather 'blue' because of low prices for vegetables, poor yields and poor quality of berries, brought about by adverse weather conditions, and poor stands of farm crops. A trip was made to Crystal Springs and Laurel early in May, and the cabbage price situation at Crystal Springs was found to be pathetic--$6.00 per ton to no market at all. Sweetpotato plantings for starch production around Laurel are conspicuous and growers seem much encouraged with acreage contracts totaling 3,100 acres.

ADMINISTRATIVE NOTES

Picnic The Fifth Annual Division Picnic was held on the grounds of the U. S. Horticultural Field Station, Beltsville, Md. from 2 p. m. until well into the evening on Saturday, June 4. Attendance records were broken and Dr. Auchter must have been delighted at the manner in which these annual affairs are justifying his belief that they would prove an effective means of building up friendly relations among our employees.

The outstanding feature of this latest picnic was the contest for a cup offered by Dr. Auchter to the boy or girl belonging to a family connected with the Division who correctly named the greatest number of plants within the station grounds during a tour conducted by Dr. J.B.S. Norton of the University of Maryland, who is recognized as the present leading authority on the flora of this general region. Betty Reed, daughter of C. A. Reed, rather astonished the scientific onlookers by naming 52 of 70 plants correctly. Her name will be inscribed on the cup, which will remain in her charge for one year. It has to be won three times for permanent possession.

The hospitality committee rather outdid itself, lemonade being greeted with sustained enthusiasm during the intervals of horseshoe pitching, archery, volley ball and badminton, and coffee and ice cream coming along later to supplement "basket lunches". Dr. Magness and his outfit proved too much for the business office team in the annual baseball game, and rather added to the bitterness of the defeat by practically deciding the issue in their first turn at the bat--scoring 6 runs. The final score was 12 to 10. The umpiring of Cullinan and Regeimbal attracted much comment, especially the latter's ability to "take it" as demonstrated when he was hit in the chest by a passed ball. Dr. Cullinan won a permanent friend by calling a couple of close decisions in favor of "Cheyenne" Roney who played a stellar game at second base, even if he did spend Sunday in the rest room of a local hospital. Or is that a bit of malicious gossip?

The contest to decide who could secure the most autographs was won by Mrs. Herbert Block with the astonishing total of 202 signatures--which, incidentally, is something of an indication of the attendance. A good bit of excitement was occasioned by the name "Charlie Chaplin" that appeared on a number of books, but Mary Frances Benedict finally caught Dr. Auchter in the act of signing for the famous "Charlie." What did she do about it? Exactly what you would have done--nothing. Several of the contestants secured 150 autographs or more. The prize was an attractive address book. To Helen Ferguson goes a good bit of the credit for the success of this contest, the details of which kept her so busy that she had to abandon any idea of winning the prize for herself.

--Robert W. Linehan

ADMINISTRATIVE NOTES

Holidays Another legal holiday, November 11 (Armistice Day), has been created by the Act of Congress approved May 13, 1938. The list now includes January 1, February 22, May 30, July 4, Labor Day (this year September 5), November 11, Thanksgiving Day (by proclamation, this year November 24), and December 25. Since Christmas this year and New Year's 1939 fall on Sunday, the morning half days of December 24 and December 31 are also to be included in the list of holidays.

Travel Advances Accounts and Deposits, Division of Disbursement, Circular No. 12, from the Treasury Department calls the attention of all branches of the Government utilizing the privileges of the Subsistence Expense Act of 1926, to the following excerpt from the decision of the Comptroller General, dated March 22, 1932, A-40589:

> ".....It is recognized that there are circumstances under which general travel orders must necessarily be resorted to in those cases where, by the nature of their duties, employees are required to travel repeatedly and frequently from their stations on short notice, and particularly in matters involving to some extent the exercise of individual discretion,...but the regulations require that travel to be performed be specified as definitely as circumstances will permit and it may not be considered that general travel authorizations wholly unlimited as to time and to extend an indefinite time in the future are a compliance with such requirements.
>
> "To make such travel authorizations as definite as circumstances will permit, they should be renewed at least as frequently as there is any change in status affecting the travel required of the employees and certainly not less often than each fiscal year. Where such general authorizations do not state any time limit they may not be recognized as extending beyond the fiscal year, particularly as appropriations generally are not available for longer periods when such authorizations are issued;...."

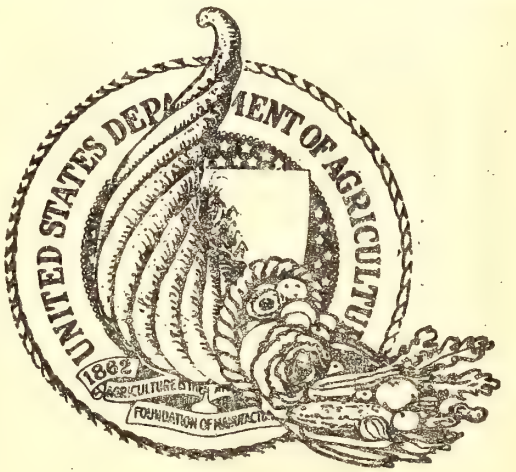
In all cases when the traveler holds an advance of funds after the period indicated in the travel orders filed with the Division of Disbursement has expired, warns Circular 12, new orders must be furnished or the balance refunded, Provided, that if an advance is applied for near the end of the fiscal year and it is apparent that the amount applied for would not be expended within the current fiscal year, the application may be accompanied by a statement to the effect that the travel will extend into the new fiscal year, at which time a new letter of authorization will be issued and a copy furnished to the Division of Disbursement.

Vol. 10 No. 12 June 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D.C., July 1, 1938 No.13

Grapes "A summary of the grape crosses made during the 1937 season at both Fresno and Oakville, Calif., shows that 57 crosses were made, 47 of which are now represented in growing seedlings," writes Elmer Snyder from the U. S. Horticultural Field Station at Fresno. "Approximately 8,000 blossoms were emasculated to produce the 47 successful crosses. The ratio of emasculations to seeds produced and resulting seedlings, was 100 to 50 to 25. Thus for each 100 emasculations made during the 1937 grape breeding season, 25 seedling plants have been obtained. In addition to the controlled crosses, 12 varieties, including some of our own seedlings, were selfed. Seeds obtained from cross-pollinated blossoms germinated 53 percent, while seeds obtained from selfed blossoms germinated 41 percent.

"Some of the more important crosses were selected for further "T" budding tests to hasten fruit production. Small buds taken from this year's seedlings of an Ohanez x Malaga cross were inserted as "T" buds into vigorous shoots of Solonis x Othello No. 1613 on May 10th. By June 3 some of these buds had produced shoots a foot long, with practically 5 months of growing season still remaining. Of a total of 438 buds inserted, 431 grew, giving a 98.4 percent stand. All individual seedlings budded are represented in growing shoots as several buds from each seedling so propagated are inserted in one shoot. If they all grow, the weaker ones are pinched back and the most vigorous allowed to grow for fruit production next season.

"The prospects in early June are for a heavy crop in our experimental vineyards as well as in commercial vineyards. The vines have been making excellent growth and the single slight spring frost did not materially affect the crop...."

DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

"It was necessary to smudge from 3:10 to 5:10 a.m. May 18," he writes June 2, "the second time this year we had to 'light up'. The smudge pots have been removed from the orchard now.

"Shoot growth has been followed rather closely for the past month. Whereas in 1937 shoot growth was completed by June 1, this year it is still in progress. In some previous years shoot growth has continued until July 1. Rate of shoot growth around May 25, was greater than for any growth period recorded in previous years at the station. Time has not permitted us to analyze the various data in an effort to ascertain the cause of this rapid rate of shoot growth. Since that period of rapid shoot elongation, quite a number of spur and terminal buds, which had definitely formed, have pushed out new growth, in some cases to the extent of several centimeters and are still growing. Some of these growths may result in secondary bloom. Blight has not been a problem as yet this season. Where a few natural infections have occurred, movement has been slow. In those plots where Mr. Nattkemper has made his inocultions, movement has been likewise very slow and no spreading has resulted. The Rogue River Valley Traffic Association issued the following crop estimate for the Valley as of June 1:

		8-year average, 1930-37
"Bartlett...	16,000 tons or 672,000 boxes	631,000 boxes
Bosc	460,000 "	367,000 "
Anjou	458,000 "	447,000 "
Nelis	98,000 "	113,000 "
Comice	88,000 "	94,000 "
Howell	20,000 "	33,000 "
Total	1,796,000 "	1,685,000 "
Apples	150,000 "	

J. R. Kienholz, Hood River, Oreg.

"An unusually large number of pear trees are dying this season for no apparent reason," he writes for the May-June 1 period. "The majority are those on Jap roots, but not limited to these by any means. The condition appears to me to be a combination of winter injury of 1935 plus irregular moisture conditions and the almost universal presence of wood rots within which have weakened the trees. The heavy crop of 1937 appears to have used most of the reserve foods so that the amount necessary to produce a good bloom with sufficient vigor to 'stick' was lacking. As a result considerable spur blighting of entire limbs has occurred. The general appearance of most limbs is nearly identical to the Silver-Leaf Disease, and it seems possible that the wood rots are causing the most notable symptoms....Cherries have set rather light at Hood River, but heavy at The Dalles. Pears are spotted but generally light, and apples show a fair set for the off-year."

DECIDUOUS FRUIT INVESTIGATIONS

Claron O. Hesse, Davis, Calif. (Week ending June 11, 1938)

"During the week I investigated a sport limb of Royal, which, from the description given last year by the orchard managers, was reported to yield 'cots of normal and late ripening types from the same spurs. It was found, however, that the entire limb gave late ripening 'cots. The limb is undoubtedly of bud sport origin, with a difference of over a month in ripening date, which seems to be the only difference shown by the sport. It is of no commercial value.

"The brown-rot survey of the apricot seedlings gave some good leads on the value of varieties in transmitting resistance to progeny. St. Ambroise, Moorpark, and Tilton were especially effective, although progeny of the latter with highly susceptible varieties did not show much increase in resistance over the susceptible parent. Royal and Newcastle were very susceptible, as were all their progeny, with the exception of crosses with St. Ambroise or Moorpark. The high degree of resistance shown by St. Ambroise progeny was surprising, as the variety is itself rather susceptible. None of the parents were completely resistant, and only one seedling was so listed this year. It is a seedling of Tilton x Moorpark. It is realized that although conditions were extremely favorable for the development of brown-rot this year the data obtained from this survey cannot be considered an absolute estimate of the resistance or susceptibility of the seedlings and varieties. However, we believe that the information obtained is highly indicative, and will prove of value in the breeding program....The first of the 'cot seedlings ripened the latter part of this week, and several more will ripen during the next week. All of these will be earlier than the earliest commercial variety, Newcastle, and all but one will be a seedling of the Newcastle."

He had written earlier: "An interesting sidelight on the apricot movements in the Winters district is the fact that of the 17 cars moved to June 6, 10 percent came from one grower whose orchard location is not in the very earliest section of the district. Three factors probably account for this: First, he has probably the heaviest crop in the section; second, nearly all this early harvest came from trees that had almost all of the main branches ringed; and third, a factor that may have contributed was the use of di-nitro-phenol sprays this spring, which gave a slight advance in bloom, an advantage the fruit maintained throughout the season. The practice of ringing the branches undoubtedly increased fruit size and resulted in earlier maturity. This practice, together with the fortuitous results of the more or less experimental use of the di-nitro-phenol spray and good sound orchard practices enabled this grower to step-up his harvest materially. He shipped Derby Royals the day after the first Wiggins Seedlings were shipped, and was able to ship a good many Derby Royals while only Wiggins Seedlings were moving from other orchards normally earlier because of location."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Cranberries are coming into bloom on many bogs that were not hurt seriously by frost," he writes June 18th. "Reports of frost damage continue to come in and there is no question that the loss will be high from the severe frost of May 30th, which came with little warning. Most growers did not start their water until too late to save all their buds.

"Several growers have applied their first rot-control spray. A few men have begun dusting for control of leaf hoppers. On a number of bogs, however, the blunt-nosed leaf hopper has failed to put in an appearance so far. Whether the hatching of the eggs of this insect is delayed on these locations, or whether the hoppers were practically eliminated by the control measures of last year, remains to be seen; however, the fact is very encouraging....Many cranberry growers have applied large quantities of kerosene to their bogs for control of grass and rushes, with varying success. Most of this work was done soon after the removal of the winter flood from the bogs, and resulted in no apparent injury to the cranberries. However, in some places kerosene is still being applied on a smaller scale, mostly with knapsack sprayers, and this is frequently followed by considerable burning of the new cranberry growth.

"The first New Jersey blueberries for the season were sent to market on the 14th and many growers started picking before the week was over. Some fields, however, are later and will start their harvest about June 22. There has been some trouble with partially frosted berries but this has not, in most cases, interfered with putting up a good pack."

H. F. Bergman, East Wareham, Mass.

"A heavy frost on the night of May 30th did a slight amount of damage to cranberries," he writes June 9th. "The loss is estimated at from 3 to 5 percent. I also saw one planting of blueberries on which considerable injury was evident after that frost. Cranberries are now making very rapid growth. On a few bogs from which the winter flood was let off early some of the early blossoms are beginning to open."

C. F. Kinman, Sacramento, Calif.

"The effects of floods of last winter are still developing in many peach orchards," he writes June 6. "Numerous orchards in lowlands were killed outright last winter, and in others some or many trees that started growth in the spring died when hot, dry days came. While many lowland orchards were killed or damaged, those on higher well-drained land were greatly benefitted by the heavy winter rains. In localities where irrigation water is scarce, or dry culture is practiced, orchard trees now appear to be more vigorous than they have been for several years."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

American Grapes in Storage. Although considerable experimental work has been done on the handling and storage of vinifera grapes, but little information has been available in connection with labrusca and muscadine types. In Technical Bulletin No. 606, "Factors Influencing the Quality of American Grapes in Storage," J. M. Lutz supplies information much needed in connection with the storage and transportation of table grapes of these types.

The Bulletin gives comparative storage qualities of 84 varieties of labrusca, or euvitis, type grapes and six varieties of muscadine grapes. While muscadines are seldom if ever stored commercially, it was thought desirable to obtain some information on them. The investigations were conducted at the cold-storage laboratory, Arlington Experiment Farm, Arlington, Va. The muscadine grapes used in the test were secured from Willard, N.C., Concord, Niagara, Delaware, Worden and Moore Early varieties from the Beltsville station, and the others from the vicinity of Arlington Farm.

The amount of shattering and decay of grapes in storage was least at 32°F. and increased with increasing temperature. ("Shattering" or dropping--or as it is sometimes called, "shelling," of the berries from the pedicels was determined after shaking the bunches slightly, the shaking being applied as uniformly as possible to all treatments.) Decay seemed to develop more or less uniformly throughout the storage period, while shattering became especially marked near the end of the storage period. More shattering and decay occurred at high than at low relative humidities, while shriveling was most serious at low humidities. A relative humidity of 80 to 85 percent seemed to be most desirable.

Delayed storage adversely influenced the storage life of the grapes in proportion to the amount of delay, and careful handling and the removal of cracked berries at the time of storage improved the keeping quality of the grapes. Washing the grapes generally caused a slight increase in decay during storage even when the fruit was carefully handled in baskets of 12-quart size or less. The use of sodium bisulphite seemed to cause some reduction in the percentage of decay and shattering, but it is doubtful whether it would be commercially practicable with American grapes except possibly to a limited extent, because of danger of injury and also because satisfactory results can generally be obtained by storing at 32°F. without using the bisulphite.

The most significant effect of storage upon the composition of grapes is a loss in acidity with corresponding loss in sprightliness of flavor at high temperatures. There is a slight increase of solids and acids at low temperatures apparently due to loss of water.

The refractometer proved to be a satisfactory means of obtaining a close approximation of the sugar content of grape juice.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

C. O. Bratley, New York, N. Y.

Writing from the New York City Laboratory on June 21, he says: "The month of May was spent in Puerto Rico making observations on the handling of pineapples and other subtropical fruits. During March and April Puerto Rican pineapples had been uniformly immature on arrival in New York City. Many fruits did not become fully colored even after holding at room temperature for as long as a week, and when finally colored the flavor was poor. It has been shown that sugar content of the fruit increases as it matures on the plant but that sugar formation ceases when the pineapple is picked. Further observations were made in Puerto Rico on this point, and sugar determinations were made with fresh picked fruit of various maturities to learn if partly colored fruit would possess high sugar content. Preliminary data were obtained in cold storage warehouses at San Juan on the keeping quality of fresh-picked fruit after 4 days holding in cold storage temperatures. In June a transportation test was accompanied from San Juan to New York City on the S/S 'BORINQUEN' of the Porto Rico Steamship Line, to study the behavior of pineapples of various maturities under different degrees of refrigeration. These tests have shown that fruit of a more satisfactory maturity, if shipped under mild refrigeration, can be put on the market in good condition. Additional tests are to be carried out cooperatively with the Federal Experiment Station in Puerto Rico.

"The pineapple trouble causing the greatest loss to the growers this season is cracking accompanied by gum formation between the basal eyes of the fruit. In some fields visited, 50 percent of the fruits being picked were affected. Although culling was heavy, much of the affected fruit was packed and shipped. The cracks are always lined with shallow decay caused by a species of Fusarium or Penicillium. These fungi are probably secondary, but no one has determined the primary cause of the trouble. The progress of the decay during transit is negligible.

"It was gratifying to find that some of the larger shippers in Puerto Rico are using our benzoic acid-alcohol treatment for control of black rot in the fruit. This decay was controlled completely in test lots given the treatment, while untreated commercial lots handled with the test lots showed about 4 percent of the decay. That black rot sometimes causes alarming losses was shown two weeks ago when Cuban pineapples shipped during an extensive rainy period arrived in New York City showing an average of 35 percent loss in a large cargo."

NUT INVESTIGATIONS

C. L. Smith, Austin, Tex.

"The nut casebearer infestation is very heavy in this area on most pecan varieties, and what promised to be a big crop now looks like a very small one."

SUBTROPICAL FRUIT INVESTIGATIONS

E. M. Savage, Eustis, Fla.

Writing concerning the possible use as a rootstock or in connection with breeding work, of the native relative of the cultivated avocado, known as Red Bay (Persea borbonia), he says: "Observations on the action of individual flowers, tagged on two trees at Eustis, show much similarity between their behavior and those of the edible avocado, Persea americana. The P. borbonia flowers, like those of P. americana, have two distinct openings. During the first all flowers are receptive and all nine stamens open out flat, at a right angle to the pistil, but no anthers open and there is no pollen. In the second the pistils are dry and many of them have a darkened spot on the end. Three of the stamens remain close to the pistil while the other six open to a 60-75 degree angle. The anthers open and shed their pollen just as do those of the avocado. However, the blooming time is several weeks later than the avocado. P. borbonia had open flowers each day during the last week in April and the first week in May.

"Unlike the P. americana varieties, which have been put into two reciprocating groups on the basis of the time when flowers first open in the morning or afternoon, P. borbonia has both its flower openings in the afternoon; at least this is the case in the trees observed so far. Observation of larger numbers of flowering trees might disclose reciprocating groups. The flowers began their first opening between 11:50 a.m. and 12:15 p.m. and remained wide open two hours. They started their first closing between 2:10 and 2:30 p.m. and very few were yet slightly open at 2:50 to 3:00 p.m. Free pollen was observed within fifteen minutes after the flowers started their second opening, but then no open flowers had receptive pistils, though some were not discolored, all pistils seemed dry. The second opening lasted 2-1/2 to 3 hours with the flowers beginning to close at 5:30 to 6:00 and very few were yet slightly open at 7 p.m. After a day following the second closing the flowers dropped off if touched lightly and many were knocked off by the numerous insects which work over the flowers for pollen and nectar.

"Last year, 1937, these two trees produced many mature fruits. It is quite likely that a rain just before noon or a cold morning followed by a rapid rise of temperature in the afternoon might delay the first opening of flowers and thereby cause an overlap of the two openings in a day, which would give the busy insects opportunity to pollinize hundreds of flowers and thereby produce a crop of fruit. (We can test the effect of rain with a spray from the irrigation line next year.) This year the days were hot and clear with not even a light shower till there were very few flower buds left on the trees, so the prospect is for very few fruit this year. Other trees should be observed to find if there is a reciprocating variety of P. borbonia; also P. borbonia should be tried as a stock for some of our best avocado varieties, and attempts should be made to cross the two species to secure possible hybrids resistant to low temperature. It is reported that Edward Simmons tried P. borbonia as a stock about 1915 with apparently no success. It may be that other strains might prove better suited than those used by him."

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"Reports coming into this office indicate that in the majority of the orchards in this territory the crop set was rather small and recent reports indicate that case bearer has greatly reduced the crop in most of the orchards so that there probably will be a very light crop produced in this territory this season," he writes from the U. S. Pecan Field Station on June 20th. "Growers are becoming more interested in spraying for control of foliage diseases and it is possible that two or three spray machines will be purchased before next season."

He had written earlier: "A visit was made to Mr. R. J. Stalcup's orchard at Frierson early in June. Most of the trees in this orchard had set a good crop of pecans but some growing on less fertile soil did not bloom very heavily. In a portion of the orchard where the soil was less fertile the foliage was badly infected with vein spot, appearing on the first five or six leaves, both leaf blade and radius, and in some cases on the twigs. Success trees in the portion of the orchard where the soil is fertile have practically no damage from vein spot. The explanation at the present time seems to be that the trees on the more fertile soil started into growth earlier and the foliage was more mature at the time of the prolonged rainy weather in the spring and was thus less subject to infection. The trees on the poorer soil started into growth later and were in a susceptible stage at the time of greatest spore liberation. Later appearing foliage is practically free of vein spot at the present time."

F. N. Dodge, Robson, La.

"Pistillate blossom counts were made during the week ending June 6, on some of the trees sprayed last year with bordeaux and some not sprayed. These counts show no significant differences with Schley and Success, but with Stuart there are three times as many clusters of nuts on the bordeaux sprayed trees as on those not sprayed. It is interesting to note that unsprayed Stuart trees defoliated earlier last fall and more completely than did the Schley or Success trees. Approximately 25 cents per tree spent last year for materials and labor in applying two bordeaux sprays and one nicotine and oil spray on Stuart trees promises to make a difference of 24 pounds of pecans per tree at harvest time. We have used 16 pairs of Stuart trees (32 trees) in the study. With 15 of the pairs blossoming is heavier on the bordeaux sprayed trees than on those not sprayed. With one pair the blossoming was equal on both trees....

"Some Vitis rotundifolia grapes, James variety, on this station, have berries about one-third of full size and also have new blossoms which have been formed on the newest growth. About one-fourth of a normal set of the first blossoms occurred; probably because of the late freeze, and now we are getting a second bloom on both the staminate and the pistillate vines. The last, or present, bloom is sufficient to make a good crop if it sets."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Our nut drop and nut growth data are showing some interesting facts this year," he comments in his report from the U. S. Pecan Field Station and Laboratory for the week ending June 18th. "On both Schley and Moore the unpollinated nuts have all dropped. A relatively few unpollinated nuts were still on the trees six weeks after optimum receptivity of the stigmas but all dropped within the two succeeding weeks. On Moore, unbagged open pollinated clusters set a smaller percentage of nuts than did bagged, hand pollinated clusters. Unbagged, open pollinated clusters with the terminal leaves removed as for bagging set about 20 percent fewer nuts than did similar clusters on which the leaves were not clipped. These data lead to the general conclusion that the bags were of less influence in the set of nuts than was the removal of leaves preparatory to bagging. It is hoped that these data will be ready for detailed report, and possibly for publication, in the near future. The nut growth data are showing that up to the present almost without exception, the nuts which dropped were the smallest in the cluster as much as two or three weeks previously. However, the last records show that the nuts which dropped were almost as often the largest as the smallest, indicating that a different cause for the drop is beginning to appear. Shuckwork punctures are becoming more and more common and it is likely that the drop of the largest nuts is being caused by this insect."

Milo N. Wood, Sacramento, Calif.

"I spent a short time in areas in the Sacramento Valley which were damaged by high water table," he writes for the week ending June 18th. "I was rather surprised to see in the Chico district that the high water continued over a period of weeks, reached almond orchards, and did a great deal of damage. Both old and young trees have been entirely killed by the high water table. In the Chico district alone there are hundreds of acres destroyed in this manner. Some very old trees were killed by the high water table in areas where such conditions have never prevailed in the past. There is now considerable argument as to whether peach or almond root will withstand the high water table best. It is clear that most of the older orchards and probably most of the young orchards were on peach root. Some of the young almond orchards which have died from this cause are on almond root. In one or two instances where the water table did not come clear to the top of the soil, it looked as if the peach roots which spread out near the top of the ground survived while the deeper almond roots died. However, as far as I could see the prolonged highwater table killed as many trees on peach root as it did on almond root. The fact of the matter is that the prolonged period during which the soil was completely saturated with water was enough to kill any tree. It is to be regretted that so many acres of good bearing orchards have been destroyed in this manner. It was also surprising to see how long some of the almond trees could withstand seepage water...The effect of frosts in this district is rather marked. Some orchards have very heavy crops but it seems that only the orchards where smudge pots were used came through with much of a crop..."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Results of cross-inoculation studies carried on in the fall of 1937 were also taken during the forepart of the week," he writes June 18. "Relatively large, well-defined cankers, up to 20 mm in their maximal diameter dimension, were present about wound inoculations made in one-year-old filbert branches with two different isolates of the filbert blight bacterium, while only very small dead areas, not exceeding 2 mm in diameter, were present about the punctures made with Phyt. juglandis, the walnut blight pathogen. Results of these cross-infection studies further indicate that differences in pathogenecity between these two organisms do exist, even though they cannot be separated by morphological or physiological methods. During the latter part of the week a trip was made to my walnut blight field station near Aumsville, Oreg. to check on the incidence of blight. Only about 8 percent of the nuts in the untreated plot were found to contain blight lesions at the present time. A hasty survey in a plot sprayed with bordeaux mixture (2-2-50) and copper oxalate (1-1/2-50), respectively, revealed but very few infected nuts. Small 'sampling' counts made indicate that between 3 and 4 percent of the nuts in these plots contain blight lesions. It is evident from the results of this preliminary survey that unless the weather during the next two weeks is abnormally rainy, blight infection will not be severe enough this year to give us a good check on the comparative efficiency of the various spray materials used."

He had written June 11th: "The results of studies on the relative amount of spray injury to walnut foliage, carried on in a Franquette orchard near Scholls, Oreg., were also taken during the week. As was the case in tests carried on in other orchards, bordeaux mixture 2-2-50 made with a high-calcium lime caused appreciably more foliage injury than bordeaux 2-1/2-50 made with the same lime. Bordeaux 2-1/2-50 made with the high-magnesium lime, on the other hand, caused appreciable injury--in fact it caused almost as much injury as bordeaux 2-2-50 made with a high calcium lime. The addition of a heavy petroleum oil (viscosity 100-110 seconds Saybolt) or an oil emulsion, at the rate of 1 pint of oil or oil emulsion to 100 gallons of spray, to all concentrations of bordeaux mixture used reduced the injury to a race or to an insignificant amount. Brown leaf scorch of walnuts, a non-parasitic disorder characterized by a browning and death of the tissues between the veins, is very prevalent again this season. It became evident shortly after the abnormally warm spell that prevailed in the Willamette valley during the latter part of May and the forepart of June. This fact would seem to substantiate the theory that the disorder is due primarily to excessive transpiration or to an improper balance between transpiration and conduction. The trouble is particularly severe in orchards on marginal soil types which are characterized in the main either by an impervious subsoil, particularly at deeper lying soil levels, or by a relatively high water table during the winter months."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"Since there are so few nuts on the trees in our check plots in the Palmyra orchard, I made counts to get the percentage of terminals showing nut clusters," he writes June 18th. "I found 72 percent of the terminals in the sprayed plots (3-1-50 bordeaux and 3-3-50 bordeaux) have nut clusters, while but 6 percent of the terminals in the check plots have clusters. These two plots have had the same fertilization and cultivation but the trees in the check plots always lose their leaves in late summer and early fall from scab and foliage diseases.

"So far this year there has not been enough scab on the check trees to cause any premature dropping of the nuts. Growers who are spraying in this vicinity visit our laboratory to look over our experimental plots and are especially interested when we are able to take them to nearby orchards to show them that growers who are following our scab spray schedule carefully are getting as good control as we are. We think that in itself is an excellent recommendation for our spray program."

ADMINISTRATIVE NOTE

Employees' Compensation Act

The Business Office has constantly endeavored during the past several years to impress upon employees of the Division of Fruit and Vegetable Crops and Diseases the importance of familiarizing themselves with the benefits accruing under the Federal Employees' Compensation Act, as well as the proper procedure to be followed in the event of injuries received in the performance of official duties. On several occasions detailed mimeographed instructions have been mailed to every field office and station, and briefed instructions have appeared in the News Letter from time to time, but it has recently developed that a large number of our field representatives are still in almost complete ignorance of the Federal Employees' Compensation Act.

This act applies to all employees paid with Federal funds, whether permanent or temporary, under formal appointment or merely paid under letters of authorization. Inasmuch as the official superior is responsible for the furnishing of necessary medical and hospital treatment to employees injured in the performance of duty, as well as acquainting employees with the benefits to be received under the Act, it is extremely important that each field representative familiarize himself not only with the provisions of the Act and the procedure to be followed, but also with the medical facilities available in his locality.

Field representatives who have not received the mimeographed instructions and Form C.A. 76, which lists hospitals and physicians available to employees of the United States, should notify the Business Office at once.

ADMINISTRATIVE CHANGES

A memorandum, dated June 23, 1938, from Dr. Auchter to members of the Division, announces a number of important administrative changes:

"I am pleased to announce the appointment of Mr. H. P.Gould as Principal Horticulturist in Charge of the Division of Fruit and Vegetable Crops and Diseases," he writes. "Mr. Gould's wide knowledge of horticultural problems and his intimate knowledge of the Division as well as the Bureau and the Department especially fit him for this position. I feel sure that you will give him the same fine cooperation and support that you have always given me.

"I am similarly glad to announce that Mr. C. E. Schoenhals has been appointed to the position of Assistant to the Chief of Bureau. Although all members of the Division will regret to see Mr. Schoenhals leave it, I am sure you will be glad to know that he will assume even greater responsibilities in the Bureau.

"You will all be glad to know that Mr. L. O. Gillette will assume the duties in the Division which Mr. Schoenhals has been handling, and Mr. W. D. Roney will be in charge of the business office."

AUTOMOBILE LIABILITY

The News Letter has from time to time cautioned employees against driving Government-owned vehicles on the public highways unless the drivers are covered by liability insurance--and have, of course, been issued a Department's driver-permit. This matter is again called to your attention and it is urgently requested that in the event that your liability insurance has lapsed you lose no time in renewing it. It is essential that you be protected at all times while driving Government-owned cars off the station grounds.

If there are any questions you wish to raise about liability insurance or the issuance of departmental permits, please do not hesitate to write to the Business Office for information.

EXHIBITS

When requests for exhibits at fairs, etc. are received, it is suggested that they be referred to Washington for approval, where they will be taken up with Mr. F. L. Goll, who handles our Bureau exhibits. Sometimes the management of fairs, expositions and other exhibition occasions, or members of Congress acting on their behalf, ask for exhibits and where employees or agencies reply direct, without knowledge of what the Department has already planned, confusion results. It is important that such work be centralized--and handled in accordance with the Department Regulations, Par. 1511.

ADMINISTRATIVE NOTES

H. P. Gould Our New Chief

Mr. Harris P. Gould has just been appointed Principal Horticulturist in Charge of the Division of Fruit and Vegetable Crops and Diseases. Mr. Gould entered the Department in 1901, with an excellent background of training and experience. He then had his B.S. from Maine, and a post-graduate M.S.A. from Cornell; had served as horticultural aid at Cornell and as State nursery and orchard inspector for New York. After a few terms at Maryland Agricultural College, he came to the Bureau on July 1, 1901.

My first meeting with the "H. P. Gould" signature was back in 1906--yes, I'm one of the Bureau's old timers also. It appeared on a carbon copy of what seemed to me one of the best letters I had ever read. After 32 years of glimpses of such carbons, I'm still convinced that H. P. Gould writes the most effective letters in the Government service--letters that win and hold friendship and trust! No man receives a letter signed "H. P. Gould" without realizing that it represents a real answer to his inquiry, an answer based on a friendly and helpful consideration of the problem presented. The number of persons who have never met Mr. Gould personally but who regard him as a friend is amazing.

Most of us, of course, never learn to write friendly letters. We give an honest reply, but we do not know how to impart the very desirable note of helpfulness and sincerity. Will Rogers had that touch and made his appeal even without the aid of the English language; Mr. Gould's amazing success as a letter writer is greatly helped by his ability to clothe his thoughts in effective English. Letter writing is a good bit more important than some of us realize, for it happens now and then that a correspondent's lifetime attitude toward us--whether he is to be a critic or a friend--rests on the tone of a single letter from us.

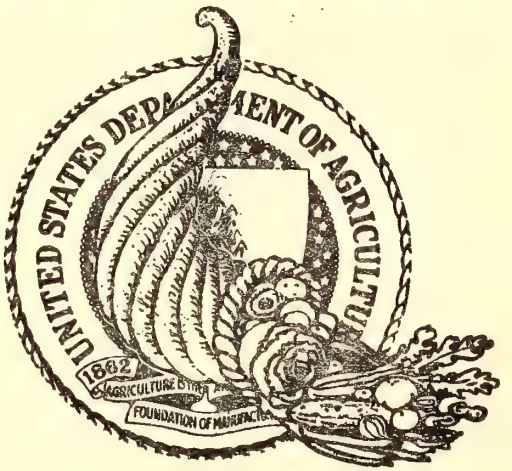
When Mr. Gould joined us, scientific research was very much of a stepchild. One of its most difficult problems was to overcome the opposition of the very group we wished to help, the farmers. Very few farmers in those early days had any appreciation of the relation that should exist between them and the research worker. Most of them regarded the scientific investigator as an impractical theorist who wore a white collar and tried to look wise. The man who could write an effective letter immediately proved that he could win over these farmers. He fitted in perfectly with the needs of the new research program. He still does, for his steadfast policy has been to prove all things horticultural and hold fast to those that are good. He has kept abreast with changing horticultural conditions with the result that he is in step with even the youngest of our specialists--speaking his language, understanding his problems. Mr. Gould's ability, accomplishments, and record, as well as the respect with which he is held by American horticulturists, make his selection to head up the horticultural work a logical one. We feel sure he will have the cooperation and support of all the members of the Division.

Vol. 10 No. 13 July 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., July 15, 1938 No. 14

Tomatoes The tomato has long been a very much misunderstood member of the horticultural family. Modern studies in human nutrition are rapidly bringing new light to bear on its assets, however, and we are beginning to appreciate that the tomato has been endowed far more than most fruits and vegetables with the power of guarding our health and well being. Better still, we are finding that the canned product retains the rich vitamin properties of curative and preventative value that the freshly picked tomato possesses. Tomatoes, fresh or canned, are excellent sources of vitamins A, B and C.

This, of course, may help to soften the recollection of some things that happened to Dr. H. L. Blood on a recent trip that took him through six countries in South America for the purpose of collecting wild and cultivated tomatoes. It may even dim the recollection of a thrilling trip down the famous Chanchomayo Valley, with car fenders hanging over 2,000 feet precipices as the automobile circumvented the curves. It may dim the recollection--but his hair is permanently grey!

"We arrived at Callao, the seaport for Lima, Peru, November 20," he writes of this trip, made as a staff member of the Division of Foreign Plant Exploration and Introduction. "From there we began our arduous but interesting task of finding and collecting the different types of cultivated and wild tomatoes that adorned the native markets and graced the surrounding hillsides. Excursions were made from Lima into the inner Andean country, to the head waters of the Amazon River and northward along the dry coastal desert. We soon discovered that few tomatoes of any type could be found at elevations above 10,000 feet and that very few of the wild forms existed east of the Continental Divide.

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"Two types of Lycopersicum were found in Peru. First, the common red-fruited type and second, a greenish-white fruited type. Strange as it may seem, we found wild tomatoes of both of those types along the fog-moistened hills and along the river valleys traversing the desert. Some of the greenish-white fruited types were found growing in very dry habitats and appeared to possess remarkable resistance to drought.

"From Trujillo and Chimbote, Peru, excursions were made into the more fertile and cooler intermountain valleys. At elevations from 8,000 to 10,000 feet, another type of green fruited tomato was found with large, coarse leaves covered with hirsute pubescence. The vines of that tomato appeared to be very large and were observed growing up and over old adobe walls 8 feet high near the Banos de Incas at Cajamarca. A collection of a small red fruited tomato current resembling Ly.pimpinellifolium was made from some deep pits in the ruins of Chan Chan near Trujillo. That community, now represented only by ruined adobe walls in a very poor state of preservation, was built by the Indians of the Chimu civilization who were conquered by the Incans during the formative period of that great empire. Perhaps the puny pimpinellifolium made its meager contribution to the diet of those ancient peoples!

"Another type of small, red, wild tomato was collected near Lambayeque in northern Peru. The fruit of that tomato was slightly larger than the fruit of Ly.pimpinellifolium and conspicuously pubescent. The foliage resembled that of the species Ly. esculentum L. The old Incan ruins about Cusco in southern Peru were visited with interest although very little wild tomato material was observed. In Santa Ana, along the Rio Urubamba, we found a small currant wild tomato. Two other wild ones were reported as growing in the region during other seasons of the year and the agronomist of the Hacienda, Santa Ana, promised to collect and send us seed. A very interesting, unspoiled native Indian market was visited at Chincheros near Cusco, where even Peruvian money was of no value, all trading being done by barter with quantity rather than quality being the deciding factor in the trade!"

From Cusco, Dr. Blood passed into Bolivia, but was unsuccessful in finding wild tomatoes. "Tomatoes are cultivated in the lower river valleys near La Paz, in the Cochabamba Valley, in the valleys near Sucre and in the river valleys about Tarija; all at elevations from 7,000 to 9,000 feet. The best tomatoes were grown in the vicinity of Tarija, one of the very few places in South America where a conscientious effort is being made by the inhabitants to grow good fruit."

The tomato is an insignificant "fruit vegetable" playing only a very minor part in the diet of the native inhabitants of South America, Dr. Blood found, and it was difficult to make the people realize that the tomato is of sufficient importance in the United States to justify a

VEGETABLE INVESTIGATIONS

special trip to their countries for the purpose of making collections of the inconspicuous wild forms and the very poor native cultivated forms. Surprisingly few of the inhabitants, in fact, knew that they were living in the region that could lay claim to being the home of the tomato--thus seeming to prove that even in the vegetable kingdom a prophet is not without honor--save in his own country!

"From Bolivia we passed into the Argentine, but Bolivia and Argentina offered nothing in the way of wild forms of tomato. A disease that resembles our Western Yellow Blight or Curly Top was observed widely distributed in Southern Bolivia and in the Argentine, and other virus diseases of the tomato were also widely distributed...Recently a breeding program for disease resistance has been undertaken at the Agricultural Experiment Station, Salta, Argentina.....

"From the Argentine we passed through Mendosa and the Andes mountains into the heart of the commercial tomato producing area of Chile near Santiago. Improved strains of European and North American tomatoes are being used throughout that region. Our old friend, Bacterial Canker (Aplanobacter michiganense) was found to be very prevalent. Small patches of tomato were observed to be almost completely destroyed by the disease. Wilt, perhaps of the Fusarium type, from appearances, was next in importance, with the virus diseases coming in for their share of responsibility for crop destruction....Wild tomatoes of the whitish-green fruited type abound in Northern Chile and Southern Peru. Near Moquegua, Peru, a red fruited type was found covering the foothills of Mt. Estuquina. The plants were all in the seedling stage, growth having been initiated by recent rains. No fruit was available and we were unable to make collections.

"In Columbia we found a pink-fruited cerasiforme type of tomato growing wild and very widely distributed in the Cauca River Valley."

This trip by Dr. Blood, incidentally, appears to be the first expedition sent to South America for the purpose of collecting tomatoes, though numerous attempts have been made to collect potatoes, corn, peanuts, avocados and other horticultural plants. The destructive nature of the Western Yellow Blight disease of tomato in the western United States, however, taken with the many other diseases of the tomato prevailing in other parts of the country, appeared to justify a tomato-collecting expedition into the country that may properly be considered as the home of the tomato. Dr. Blood feels very much encouraged with the results of the trip and is especially enthusiastic over the uniform courtesy with which he was received. "We hope," he concludes, "the Essential Oils of Lycopersicum have served to lubricate the machinery that is fabricating the bonds of friendship and good fellowship between ourselves and our South American neighbors!"

NUT INVESTIGATIONS

A. H. Finch, Tucson, Ariz.

"Pecan blossoming was delayed this year following the unusually warm winter and the dropping of young nuts extended slightly later than in years of ordinary temperature," he reported June 18th. "This, however, is now over and it is possible to make some predictions of the crop prospects and observations on the influence of the warm winter on the various varieties. The crop generally will be lighter than last year. In the Yuma Valley there will be almost no nuts on Schley or Success trees, and very few Kincaid, and Western. The Halbert crop will be medium. It is characterized by small clusters compared to 6 to 8 nuts per cluster which commonly occurs. The few Mahan orchards have fewer nuts than usual, but trees are carrying a good crop. The Burkett crop on the contrary is reasonably good and will be approximately the same as last year and perhaps as heavy as in any previous year.

"In the Salt River Valley, where winter temperatures are slightly below those of the Yuma Valley, Schley and Success trees have a better crop, but it is not heavy. The Halbert variety has a medium crop and Burkett has an average to good crop. As the greater proportion of the acreage in the State is made up of the Burkett variety, total production this year will not be greatly less than previously. The fact that the trees are increasing in size may offset the reduction due to the small crop on Success. Pecan trees have made a good growth this season. Apparently no permanent harm was done by the warm weather. This is reassuring since the past winter was the warmest in history."

Howard E. Parson, Shreveport, La.

"On June 21st an inspection trip was made to my experimental plots. It was found that quite severe burning has resulted from two applications of 2-50 copper solution plus 1 quart summer oil emulsion to 50 gallons. Slight burning on the lower leaves was noticed after the first summer application making me think then that perhaps pecan leaves cannot stand the application of copper sulphate solution with the force used in applying bordeaux mixture, but after the second application severe burning appeared over the whole tree. I do not believe that it is the oil emulsion in the spray that caused the burning because at the same time the copper sulphate solution was applied two plots adjacent to this plot were sprayed with 1 quart summer oil emulsion to 50 gallons plus nicotine sulphate 1-4,000 and no burning resulted from its application. Further spraying of this plot with copper sulphate solution will be discontinued for this season."

THE KIEFFER PEAR FOR USE AS FOOD

"Ye who listen with credulity to the whispers of fancy, and pursue with eagerness the phantoms of hope; who expect that age will perform the promises of youth, and that the deficiencies of the present will be supplied by the morrow--" attend the story of an achievement that no less an authority than our colleague, Dr. J. S. Caldwell, pronounces an unparalled victory over the forces of nature--an achievement ranking with the transmutation of the elements. Yes, we've found ways to make the Kieffer pear useful as food!

The Kieffer, of course, is widely grown in the Southern and Eastern States, where it yields large crops and is less severely attacked by the dreaded pear blight disease than many of the choicer varieties. The fruit as ordinarily ripened, however, is of a quality and, let us say, impenetrability, that arouses but little enthusiasm on the part of the would-be consumer. There is a legend that when young woodpeckers are fully fledged and ready to leave the nest, the mother takes them to a Kieffer orchard and places each on a limb adjacent to a Kieffer pear. She then gives the order to peck, and the fledglings hammer away until exhausted. This exercise is systematically continued day after day with the result that the neck and breast muscles of the young birds are so developed that they become able to knock visible chips off the surface of the pears. The mother then dismisses them into the world, confident that no matter what type of forest may subsequently be their habitat, they will be able to dig nesting holes in any tree they tackle.

Because the Kieffer may be grown in sections where pear blight ravages make growing of the Bartlett and of most of the other choice varieties impracticable, our specialists believed it desirable to seek to discover ways of making the Kieffer pear more usable as human food. They succeeded by finding that it should not be used as soon as harvested, but instead should be stored for about two weeks at a temperature ranging between 60° and 65°F., no higher and no lower. Merely storing for two weeks is not enough; and the temperature must be kept within the narrow range indicated. (Dr. J. M. Lutz canned Kieffer pears handled in this manner and, selecting three of the best commercial grade of canned Bartletts from retail stores for use in comparison, had nine judges grade the different lots--and to his gratification every one of the nine rated his various lots of Kieffer pears as superior in flavor to the Bartletts!)

A popular discussion of the findings in connection with the work is given in Farmers' Bulletin 1796, "Handling and Preparing the Kieffer Pear for Use as Food," by C. W. Culpepper, J. M. Lutz and H. H. Moon; Circular 450, "Drying Kieffer Pears and the Use of the Dried Product," by Culpepper and Moon, goes into another phase of the work; Technical Bulletin 590, by Lutz and Culpepper, tells of "Certain Chemical and Physical Changes Produced in Kieffer Pears During Ripening and Storage"; and Technical Bulletin 592, by Culpepper and Moon, describes "Factors Affecting the Rate of Drying in Kieffer Pears."

TREATING CUTTINGS WITH INDOLEBUTYRIC ACID

In the American Nurseryman for May 1, Guy E. Yerkes tells of experiments conducted at Beltsville during 1937 in connection with cuttings of a number of shrubs and trees treated with indolebutyric acid in various dilutions of water and for differing periods of time.

The experiments were conducted in an ordinary propagation house with sand as the rooting medium. No bottom heat was used during the summer, the prevailing air temperature being too high, but heat was used in autumn and winter to maintain the sand at about 70°F. The treatment consisted in immersing the basal ends of the cuttings to a depth of about one-half inch in water solutions containing indolebutyric acid at the rate of two to twenty milligrams in 100 cubic centimeters of water. During the time the cuttings were immersed they were placed in the propagation house exposed to light, but screened from direct sunlight. All the cuttings were from outdoor-grown wood, 20 cuttings being used in a test, and the tests being repeated on many of the species to compare the effect on different stages of growth. During hot weather a period of four hours in the solution gave results equally as good as, or even better than, longer immersions in many cases. This shorter period, being somewhat at variance with the twenty hours or longer usually recommended, is suggested for trial rather than as a definite recommendation for general use.

On one group of cuttings root formation was hastened but the eventual percentage of successful cuttings was not materially larger; on a second group, more roots were formed than on untreated cuttings but without an important gain either in time or percentage of successful cuttings; while with a third group roots were induced on some plants we had been unable to root without the treatment. Whether gains resulting from the treatment would be commercially important depends, therefore, on circumstances. Under conditions at the Beltsville station, however, the cuttings in the third group of species were decisively benefitted; and even in the first group the gain in time required for rooting was an advantage, especially when unfavorable hot weather intervened, by sooner enabling transfer of the rooted cuttings to more favorable environment.

The use of the chemical treatment, of course, does not take the place of the close attention to details necessary without the treatment. The selection of the most suitable wood, the care of the cuttings while in the rooting medium, and the precautions to be observed to check losses from diseases, remain important elements for successful results whether the cuttings are treated or not.

In the subsequent growth of the plants, Mr. Yerkes' tests showed no appreciable difference between those cuttings induced to root by the aid of treatment with the indolebutyric acid and those rooted in the usual manner.

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on June 25th, he said: "Cranberry bogs are being sprayed and dusted for leaf hoppers and rot, and a few bogs are being re-flowed for leaf-hopper control. The majority of cranberry buds are in the 'dangle' stage. Leaf hoppers are much less abundant on most bogs than in any recent year, some bogs yielding no hoppers at all and many others as low as 1 insect per 200 sweeps. This may be the cumulative result of previous control campaigns, but we suspect that it is aided by some natural factor. Large amounts of pyrethrum are still being used.

"The blueberry harvest is just getting under way in earnest. Daily shipments jumped from 300 'flats' to 4,000 during the week. Picking was interrupted on the 22d and 23d by rain, but the berries picked subsequently were of good quality, neither over-ripe nor cracked. The harvest should be heavy next week.

"Some fields show a large number of defective blueberries which increase the difficulty of putting up a good pack. Affected berries show one or more small sunken spots, even when the berries are small. These spots do not color simultaneously with the rest of the berry, remain somewhat sunken, and in some cases soften when the berry matures. They have in previous years been confined largely to Cabots, but are now noticeable on a number of varieties, including June, Pioneer, Harding and particularly Concord."

John H. Weinberger, Fort Valley, Ga.

"On a trip to Albany, Ga. the latter part of May," he writes to Dr. Cullinan," it was noted that drouth conditions were worse there than at Fort Valley. Field corn was drying up, and Uneeda peaches in the Fugazzi orchard were too small to ship.

"The trees in the Fugazzi orchards which had been sprayed with chemicals to break dormancy were inspected, and with the Early Rose variety where the sprays had been effective in hastening blooming, ripening of the fruit was advanced about one week. There were great differences in size and color of the fruit in favor of the sprays, as well as maturity. The manager of the orchard said he could have picked ripe fruit on these limbs on the 15th of May. On unsprayed limbs a few peaches were harvested on the 21st.

"Mr. Fugazzi had seen the experiment several weeks previously and had told the manager he wanted all Early Rose trees sprayed with one of those chemicals next winter. The outlook in this line of investigation is indeed encouraging."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"Apple scab has continued to make a rapid spread to fruit and foliage during the past three weeks," he writes June 22. "The latest reports received from northwest Missouri indicate that considerable difficulty is being encountered in checking, in some orchards, the spread of the disease. The problem has been complicated somewhat due to the fact that since the second cover application a number of growers have gone to a schedule of fixed nicotine and oil. This schedule, while it appears to show promise of being efficient from the standpoint of codling moth control, is presenting a new problem because of the incompatibility of lime and sulphur with the nicotine-oil. This results in the inability to use either lime sulphur, wettable sulphur or bordeaux in case a fungicide is necessary."

John C. Dunegan, Fayetteville, Ark.

He wrote July 2: "Mr. Bert Johnson, one time owner of what was claimed to be the largest peach orchard in the world, was killed in an automobile accident near Nashville, Ark. during the week. According to newspaper reports, he was returning to his home after shipping a crate of fancy peaches to Secretary Wallace, when the accident occurred.

"Marketing of the 1938 strawberry crop brought about $400,000.00 to farmers of Washington County, according to information published in the local newspapers. About 142,020 crates were shipped from Springdale, Fayetteville and Farmington. Springdale, largest shipping point in the County, shipped more than 100,000 crates, averaging from $2.65 to $2.75 per crate, according to estimates of Paul Brogdon, Springdale berry grower. Fayetteville marketed about 29,000 crates at an average price to the farmer of $3.00, according to the Farmers Market, which handled marketing here. At Farmington about 19 cars went out by rail and 12 by truck, according to estimates. These berries brought an average price of $2.50."

C. F. Kinman, Sacramento, Calif.

"The Bartlett pear crop is very heavy in many orchards this year," he writes June 30th. "This week I saw them thinning some Bartlett fruit on selected trees in the orchard near Marysville. This is the first time I have seen Bartletts thinned in that district. Possibly the high water table throughout the winter influenced the set of fruit. In nearby orchards many peach trees were killed by the high water. There has been but little fruit shedding of pears in recent weeks. In my plots where I am taking fruit measurements the fruit is somewhat smaller than on corresponding dates of last year. This year the crop of Elberta peaches is much heavier than last, and in my experimental plots there has been practically no fruit shedding in recent weeks. The peaches like the pears are somewhat smaller than they were at this date last year."

SOME PRODUCTION FACTORS AFFECTING APPLE MARKETING*

The total apple production in the United States since 1925 has fluctuated widely, the heavy crop years showing a total production of more than double the light crop years. In table 1 is summarized the apple production in the United States since 1925, as given in the Yearbooks, with separate figures for the States west and east of the Rocky Mountains.

Table 1.--Total Apple Production of the United States

Year	Western States Bushels	East of Rocky Mountains Bushels	Total Bushels
1925	52,793,000	119,596,000	172,389,000
1926	62,635,000	183,974,000	246,609,000
1927	47,244,000	76,449,000	123,693,000
1928	64,972,000	121,921,000	186,893,000
1929	51,459,000	91,329,000	142,788,000
1930	64,333,000	99,210,000	163,543,000
1931	53,719,000	126,543,000	180,262,000
1932	53,685,000	87,090,000	140,775,000
1933	50,034,000	92,947,000	142,981,000
1934	51,225,000	69,445,000	120,670,000
1935	53,457,000	113,826,000	167,283,000
1936	47,753,000	69,753,000	117,506,000
1937	52,764,000	153,952,000	206,716,000

Since 1930, apple production in the Western States has been remarkably uniform, generally ranging from 50,000,000 to 55,000,000 bushels per year. On the other hand, production in the Eastern States has fluctuated widely. It is apparent that the wide fluctuation in total production has been due to fluctuation in the Eastern States.

The following factors account for the much greater uniformity of production under western conditions:

1. Practically all the orchards are under irrigation, and this, together with the fairly strong soils, has made it possible to maintain the trees in a relatively high state of vigor as compared with eastern conditions.

2. The frost hazard is less in most of the western areas. This is an important factor, not only in not reducing the crop to an important degree in any season, but also is of even greater importance in maintaining the orchards in regular production. A severe spring freeze is likely to throw an orchard into biennial bearing.

* Summary of an address by Dr. J. R. Magness before Apple Specialist Conference, Washington, D. C., June 7, 1938.

3. A program of consistent and heavy fruit thinning is followed. While fruit thinning, as done commercially, will not correct the biennial bearing habit once it is established, the following of a consistent thinning program from the time the orchards are young has undoubtedly been an important factor in the maintenance of regular production.

4. It is not necessary to spray most of the western orchards with fungicides which are injurious to the young developing foliage. Materials used for scab control in eastern orchards are generally injurious to foliage development, and the checking of foliage may be an important factor in reducing the amount of bloom for the following season.

5. Under western conditions, most days are clear with a maximum of sunshine. This, together with ample moisture, permits of a maximum functioning of the foliage system. Under eastern conditions during cloudy weather functioning of foliage is apparently markedly reduced. Consequently, if much cloudy weather prevails during the first half of the growing season, fruit-bud formation for the following year may be markedly reduced. It is interesting to note that the heavy crop years in the Eastern States, including particularly 1931 and 1937, were years following general drought conditions when light intensity was relatively high over the eastern part of the United States.

Is it Possible to Secure Uniform Production in the Eastern States?

It seems questionable if many of the factors outlined above can be controlled sufficiently under eastern conditions to permit of uniform crops in that area. The factors of weather conditions, including frost, sunshine, and drought, are largely beyond the control of the grower. The maintenance of orchards in more vigorous condition would undoubtedly tend toward greater uniformity of production. The better commercial orchards in the Eastern States produce more uniform crops than the large block of farm type orchards which receive a minimum of fertilization and care.

Experiments have indicated that it is possible to correct the biennial bearing habit of certain varieties by early and drastic thinning. Such practices, however, will not be generally adopted because of the expense and curtailment of the current crop which results from such treatments. Also, the results of such treatments have not been as uniformly satisfactory under the fluctuating weather conditions of the Eastern States as in the West. Thus, it seems probable that we will be faced with wide fluctuations in the eastern crop in the future, as in the past.

What are the Possibilities in More Uniform Eastern Production?

While it seems questionable if the eastern apple production can ever be put on as uniform a basis as that of the Western States, it is possible to take certain steps to improve the situation.

A contributing factor to the wide fluctuations is the maintenance of orchards or parts of orchards that are in unfavorable locations or that receive a minimum of care. These orchards usually produce fruit only during the most favorable season, and thus add to the production during big crop years without contributing much during low crop years. Such orchards have little chance to be profitable to the grower but are an important factor in building up production during big crop years. The elimination of such orchards or parts of orchards should contribute toward greater uniformity of production.

Some experimental work has been conducted during recent years on the spraying of apples for the prevention of fruit set. Auchter and Roberts of the Bureau of Plant Industry studied the effect of a number of materials on fruit set and concluded that, of the materials tested, tar-oil distillate applied in the late cluster-bud stage killed practically all of the blossoms, and the injury to foliage and spurs was not great enough to prevent fruit-bud formation the following year. Such treatments may be an important means of changing the year of crop production in parts of strongly biennial orchards. No treatment has been successfully applied to reduce the fruit set without entirely eliminating the crop on the trees sprayed. Treatments that allow some fruit to escape usually result in so much disfigurement of the fruit that it is unmarketable.

The maintenance of orchards on a younger tree basis is an important factor in securing more uniform production of better quality fruit. Most old blocks of trees are biennial. Very large trees are difficult to spray, thin, and prune--necessary steps in producing good fruit. Rotating orchards to maintain the fruiting blocks at not more than 35 years of age would give better quality fruit and, on the whole, greater uniformity of production.

Finally, the importance of fruit thinning, together with other good orchard practices including fertilization, pruning, and spraying, can not be too strongly emphasized as a means of producing good quality fruit that is most readily marketed. During big crop years there is normally a large percentage of culls due to small size. This can be eliminated by thorough fruit thinning coupled with other good orchard operations. Also, a large proportion of the fruit that would be below marketable grade because of other factors, can be eliminated from the orchard at thinning time if the disfigured fruit is removed from the trees. A moderate, uniformly distributed crop on the trees following thinning is the best means of eliminating small fruit and securing good finish on the fruit that remains. Such a program tends also to reduce the total tonnage of fruit and, to the extent that it is followed through, will tend to reduce production during heavy crop years. Of greater importance than the reduction, however, is the elimination of offgrade tonnage.

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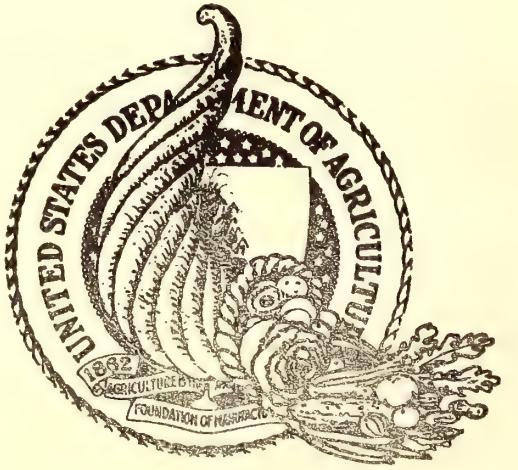
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor.

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Vol. X. Washington, D. C., August 1, 1938 No. 15

Dividends I note in the Science News Letter that the first shipment of helium sold by Uncle Sam to a private firm cost less than $60.00, although prior to 1917 the same amount of helium would have been valued at six million dollars! I haven't been able to figure any way to credit this increase in value to investigations conducted by our Division, but if you are willing to listen to the story of a mere million-dollar-a-year return on an investment of $142,000, I have some facts and figures.

Looking through the current Agricultural Appropriation bill, I found that Mr. Fisher's section of handling, transportation and storage and market disease investigations operates on an annual budget of $142,000. In a talk before the annual meeting of the American Society of Refrigerating Engineers, he was referring to our work on precooling methods. "When a carload of produce is precooled the transit refrigeration demand is materially reduced," he pointed out. "Many precooled products can be shipped under initial ice only when otherwise they would require standard refrigeration at a much higher rate. By precooling, too, a further saving in transit refrigeration costs can be obtained by making possible heavier loading of the cars. For example, precooled pears are now being shipped from Oregon in 720-box loads and arrive in New York City in as firm condition and as suitable for subsequent marketing or storage as non-precooled fruit shipped in the usual 520-box load. Since the cost of transit refrigeration is a flat charge per car, the saving per box of fruit thus becomes an item of considerable importance, estimated to mean a saving to the pear industry in the Medford district of Oregon alone of $250,000 a year."

Since we have given the Medford growers no exclusive right to the use of the method, it is being quite generally adopted, with the annual saving mounting to a million dollars or more--a very satisfactory dividend on a single phase of a group of investigations costing a total of $142,000 a year. That helium record isn't nearly as safe as it seems!

SUBTROPICAL FRUIT INVESTIGATIONS

C. S. Pomeroy, Riverside, Calif.

"Preliminary studies this spring of factors affecting the set of fruit of the Washington Navel orange indicate that 'as usual' the season is probably 'unusual!' In general, the weather has been relatively cool, with occasional light rains. About Easter, when the trees in the Highgrove district were about in full bloom on the south sides, there was a brief warm spell, which was followed by heavy drop of blossoms and very small fruits. This heavy drop was followed by a long continued light drop, which has left an approximately normal crop. At the present time the fruits are so large and vigorous that they will probably not drop under ordinary weather conditions.

"The effects of light pruning, blossom removal and a plant hormone upon set of fruit have been studied, using scattered branches on over 50 trees in a well cared for grove. Of about 11,000 blossoms counted between April 13 and 21, 19.6 percent were holding fruits on May 26th. The subsequent fruit drop reduced this set to 5.4 percent on June 2; 2.5 percent on June 14; and 2.1 percent on June 28.

"Removal of small twigs by several methods and pinching off blossoms during the blooming period, were tried with small limbs on trees otherwise unpruned.

Percentage of Blossoms Setting Fruit June 28, Based on Number of:

Pruning (14,743 blossoms)	Blossoms before removal	Blossoms remaining after removal
	Percent	Percent
Check	2.20	2.20
Pruning with small cuts	1.72	3.44
Pinching off (18,756 blossoms)		
Check	1.92	1.92
50 percent removal	1.94	3.88
90 percent removal	1.95	19.50

"The results show clearly that removing a large proportion of the blossoms increased the percentage of the remaining blossoms that set fruit. However, the total number of fruits per limb was not increased. If entire trees rather than only scattered small limbs had received such blossom removal, the stimulation of set might have been greater.

SUBTROPICAL FRUIT INVESTIGATIONS

C. S. Pomeroy (Continued)

"Since the Washington Navel orange is seedless it seems possible that plant hormones might be used to increase the number of parthenocarpic fruits that set. With the methods reported by Gardner and Marth, napthaleneacetic acid was sprayed on April 19 on about 2500 open flowers, and on May 4-11 on about 4,000 additional flowers.

PERCENTAGE OF BLOSSOMS HOLDING FRUIT JUNE 27

Date of Spraying	Sprayed with napthaleneacetic		Paired, check limbs	Change in set due to hormone
	Acid strength Percent	Set Percent	Set - Percent	Percent
April 19	.04	4.02	4.49	-0.47
	.01	2.26	3.17	-0.19
	.004	5.82	5.86	-0.04
May 4-11	.01	3.27	3.64	-0.27
	.005	2.57	3.54	-0.03

"On May 13 over 500 small fruits were treated at the distal end with .02 percent napthaleneacetic acid in lanolin. Of the fruits treated, 2.2 percent remained June 27; with 2.4 percent remaining on untreated limbs. Thus to date the results of applying this one plant hormone are only negative.

Since the amount of new shoot growth varies greatly for different trees and for different limbs on the same tree, it seemed of interest to study the set of fruit in relation to the type of shoot growth (first flush of such growth in 1935) which occurred during the 5-weeks preceding full bloom.

Type of shoot growth	Percentage of blossoms setting fruit Percent
1 - Leafy growth, which only occasionally developed a terminal flower	26.3
2 - Several leaves and also several axillary flowers	6.4
3.- Short growths, 1 or 2 small leaves, 4 to 7 flowers	0.8

"The greater set of fruit for the shoots with fewer flowers and greater vegetative vigor seems in agreement with the greater set of fruit on limbs deflorated by pinching off blossoms or cutting off twigs."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

J. M. Lutz (fruit and vegetable storage and utilization investigations)

"An apparatus was completed and tested during the week ending July 9, for very rapid freezing of fruits and vegetables. Small items such as peas were frozen in about 2-1/2 minutes; larger items required 5 to 8 minutes. These rates of freezing are approximately 10 to 30 times as rapid as ordinary 'quick frozen' products now on the market. The method employed for securing this very rapid freezing is essentially that developed by TVA but it is thought that an improvement in their method was secured in that the equipment is very much less expensive.

"The last digging for the potato sunscald investigations was made on June 23. Potatoes on this date were fully matured. Although the maximum temperature was only about 87°F. and it was rather cloudy for about two hours during the middle of the day, it appears that severe sunscald occurred even under these conditions, especially on the 'skinned' potatoes.

N. H. Loomis (small fruit investigations)

"A summary of the muscadine breeding work showed that all attempted rotundifolia-euvitis hybrids on emasculated clusters failed," he reports July 2d. "Some berries were obtained on unemasculated blossoms of James and Thomas; however, the James set fruit without pollination when unemasculated. These muscadine varieties all have reflex stamens and have been considered self-sterile. The seed produced may not be viable. All attempts to produce hybrids with the Scuppernong failed.

"During the week ending June 11 the last of the Boysenberries were harvested. Although the yields have been comparatively light even for the first year, the effect of differential treatments initiated last December has been outstanding. Pine straw mulched plots 4 to 6 inches deep have given less than one-third to slightly more than one-half the yield of the clean cultivated plots, and a 3-inch sawdust mulch gave nearly one-fifth more crop than the clean cultivated plots. The results were very outstanding throughout the season and entirely unexpected. New growth appears equally good on all plots at this time so that another year's results may be entirely different."

Atherton C. Gossard (nut fruit investigations)

"Web worms have been making their appearance in the pecan trees and have had to be removed. Pecan scab, which seemed negligible in our station orchard in previous years, has made a noticeable appearance on Schley and Mahan this year; and it has been necessary to spray with bordeaux mixture for its control. Some disease that looks like a blight or gall has been attacking some twigs of our Oriental chestnuts."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

Writing from the U. S. Fruit Disease Laboratory on June 30th, he says: "A preliminary examination of plots showing a pear disease resembling measles indicate that boron applications in the form of injections, sprays, or soil application hold little promise in correcting the trouble. On the other hand, sound limbs bearing normal fruit of the Bosc variety which were budded with diseased stock show fairly clear cut evidence of transmission in several cases. Where 5 to 10 diseased buds were concentrated towards the tips of healthy branches of about 1 to 2 inches diameter, fruits on the budded but healthy branch are showing 100 percent pitted fruit in several cases. In other cases where buds formed a weak growth or often where a single bud was inserted on a fair sized limb, fruit symptoms have not occurred. It is still too early to draw conclusions but this report furnishes the first definite clue to the cause of this mysterious trouble. If definitely a virus trouble, the truth can probably only be learned by a carefully arranged set of experiments with some original technique.

"Several trees of the Black Twig apple variety budded to Yellow Newtown show a measled condition at and above the bud unions. Other observations along this line seem to indicate that Atanasoff's ideas concerning virus troubles in fruit trees may be worthy of more consideration.

"A serious handicap with the pear trouble is the lack of any leaf symptoms (except possibly the Forelle variety) on trees showing either the diseased bark or fruit condition. The matter of original rootstock material for budding will have to be given serious thought before definite experiments get under way."

John H. Weinberger, Fort Valley, Ga.

"Most of the week was spent taking notes on type of gland, bacterial spot, and size of tree in the 1937 seedling test block," he writes from the U. S. Horticultural Field Laboratory on July 5th.

"The work has not been completed but the results so far are interesting. About 1/4 Halehaven selfs are glandless, and practically all of these glandless seedlings have brown areas on the internodes which appear to be bacteriosis, though the identification of the disease is not positive.

"Halehaven progeny are rather susceptible to bacterium pruni. Maxine and Dewey x St. John crosses are free except where a susceptible pollen parent was used, as Veteran or Hunter. Obviously all the crosses have not been exposed, and later some which appear resistant now may be severely attacked. However, leaf rust, the disease which will cause almost complete defoliation of all peach trees in about ten weeks, is now showing up."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"Later reports on injury to bogs by flooding during the three-day storms of June 26-28 reveal that several bogs were injured, a few of them severely," he writes July 9th. "The injury in most cases, however, will not exceed 25 percent and as the vines were in the early stages of bloom at that time later flowers will develop and make fruit so that the effect on the size of the crop harvested will, in most cases, be quite negligible. A few bogs were under as long as three to four days but as the weather was quite cool the amount of injury was not as great as it would have been in hot weather. Most bogs have a heavy crop of flowers and setting appears to be progressing normally. Present indications are that the crop will be smaller than that of last year."

He had written July 2: "The first application of spray on experimental plots was completed this week. The work would have been completed Monday except for a rain that started at noon Sunday and continued until Tuesday night, 6.21 inches falling. This rainfall brought the June total for East Wareham to about 10 inches. Boston reported a little over 4 inches with something more than 6 inches for the month. The highest previous rainfall in June for the Boston area was 5.53 in 1875. Many cranberry bogs were flooded but the water did not remain on the bogs long enough to do much if any, damage....Crossing of cranberry varieties for the production of varieties resistant to false blossom has been in progress for about 10 days whenever other work and weather permitted. There is more of it to be done this year but as the flowers will last for 10 days or 2 weeks more there will be plenty of material and time for the work."

"Spraying for the control of rosebloom and of fruit rots of cranberry was carried on during the week ending June 25. Early in the week several plots were sprayed for rosebloom. Bordeaux 4-1-50, 5-2-50 and 5-4-50 were used to determine the effect of increasing the lime content. On two small plots on the State bog copper sulfate 5 pounds to 50 gallons of water with 1/2 and 1 pound respectively of soap gave complete control of rosebloom without very much injury to the flower buds or vines. More injury was observed when 1 pound of soap was used but it was still not serious. Copper sulfate alone is used or may be used for the eradication of certain weeds and may be used for the control of rosebloom at the same time. For the control of certain insect pests lime must be used with the spray but as rosebloom is controlled by these combinations also one spraying will serve for both insect and rosebloom control.

"Series of plots on three bogs were sprayed for control of fruit rots. As the results of spray tests last year showed that red copper oxide is as good or slightly better than bordeaux for rot control the number of plots sprayed with red copper oxide combinations has been increased this year. Three different copper oxide preparations are being tested. Bordeaux 5-2-50 either with soap or Penetrol is being used for comparison with the copper preparations in all series of plots."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The damage resulting from the heavy rains of June 27th and 28th can now be appraised on individual bogs," he writes from the Cranberry a Blueberry Disease Laboratory on July 9th. "Where the cranberries were not yet in bloom, a flooding of 24 hours or even longer with fresh water seems to have done no harm to the crop. In one case three bogs on a stream were having the water held until July and when the freshet struck these full bogs they overflowed to such an extent that the flood could not be removed from other bogs down stream for a considerable time, and much damage resulted even to flower buds which had not reached the dangle stage. The crop was practically destroyed on an appreciable acreage. Following the bumper crop of 1937 and the spring frosts of this year, this damage will further restrict the present cranberry crop in New Jersey.

"The blueberry harvest is proceeding under high pressure, 5,000 or more 'flats' being shipped out daily during the present week. We are now very close to the height of the picking season; in some fields the peak was apparently reached during the past week while others will pick more berries next week. It is impossible to predict which week will produce the heaviest total shipments. Cracked berries, resulting from the heavy rains of late June, were fairly well disposed of by July 1st and the quality of fruit shipped from most fields during the past week was excellent. The berries ripened faster in some fields than they could be picked, with over-ripe fruit as a result. In certain other fields the 'rot' or one-sided or complete softening of the fruit reached its peak during the past week and gave rise to large quantities of berries which were difficult to sort out. Most of the affected berries on the early and midseason varieties have now shriveled so that they are no longer a problem...."

George F. Waldo, Corvallis, Oreg.

"On Wednesday and Thursday a trip was made to the Western Washington Experiment Station in company with Mr. O. T. McWhorter, Oregon State Extension Horticulturist," he writes July 9th. "On the way a stop was made at the Rowell Bros. farm near Scholls, Oreg. At this place a large acreage of Boysenberries, Youngberries and red raspberries were observed; also black raspberries. All were in very good condition in spite of the dry weather. The estimated yield is 2 tons per acre for the black raspberries; 2-1/2 tons for red raspberries; 3 tons for Youngberries; and from 3 to 3 1/2 tons per acre for the Boysenberries... At the Western Washington Experiment Station considerable time was spent in the observation of strawberries from this station which are under test, and of red raspberries being developed at that station. The new Washington variety, recently introduced, showed high production and fine quality. This station is preparing to distribute about 20,000 plants or more of each of its newly introduced varieties, Washington and Tahoma."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"The grape harvesting of 1938 has started in California," he writes July 2d. "In mid-June shipments of Sultanina (Thompson Seedless) were leaving the Coachella and Imperial Valleys. These will soon be followed in mid-July by shipments from the upper San Joaquin Valley, near Bakersfield.

"Early varieties are showing indications of maturity at the Fresno Station. Some of our grape seedlings, recent introductions, and the Panariti are starting to color and some berries are edible. The Tagouti Rouge, introduced from Teheran, Persia, is the earliest vinifera variety to ripen in our collection. Temperature correlations being studied with this and other varieties, indicate that the Tagouti Rouge will mature in a 45 to 50 day period with a mean temperature of 77.5°F. as taken from our shade-temperature thermograph charts. This variety is approximately 3 to 4 weeks earlier than the Sultanina in this section.

"Tagouti Rouge has been used in a number of our grape crosses as the male parent in an attempt to produce seedlessness as well as early maturity. This season some progeny are fruiting indicating that maturity of the seedlings is earlier than that of the female parent.

"Very vigorous growth has been produced this season from seedling buds 'T-budded' into vigorous rootstocks. Some buds inserted the second week in May have produced over five feet of main shoot growth besides many lateral shoots have pushed out. A microscopic study is being made of buds on these shoots to ascertain if fruit buds have developed any rudimentary inflorescences which might possibly be forced into growth this season. If so fruit production 10 months from time of grape seed planting may (?) be a prospect."

E. S. Degman, Medford, Oreg.

"The third cover spray was applied June 13-17," he writes from the U. S. Pear Field Station on June 25th. "In spite of what appeared to be adequate and properly timed first and second cover spray, some worms are appearing. Some of the orchards in the Valley are pretty badly infested now, and a considerable crop loss will result unless the second brood is handled better than the first. The first brood came through with a sharp peak this year. At the Station we caught an average of 110 per pot May 22, followed by 95 on the 23d, while the average catch per pot was over 40 for seven consecutive days. Some apple growers reported catches of over 250 per pot at the peak."

EARLY CHRYSANTHEMUM

Superintendent A. C. Hildreth writes July 9th from the U. S. Horticultural Field Station, Cheyenne, Wyo. that the Lavonne chrysanthemum, which wintered in the open has flowered. "This was the second consecutive season that this variety wintered successfully in the open and this is the earliest date any chrysanthemum variety has flowered after wintering outside. There are very few blooms as yet, but a considerable number are expected within a week or 10 days."

RELEASING NEW PEACH AND PLUM VARIETIES

The Chief of the Bureau of Plant Industry has sent a notice to growers and nurserymen, announcing the release of three peach and one plum variety originated in connection with the fruit breeding investigations of W. F. Wight of our Division at Palo Alto, Calif. The variety tested as No. 32-11-A will be introduced under the name Penryn. The Penryn, originated from a cross of Maxine with Leader, is primarily intended as an early freestone dessert variety ripening a few days in advance of Maxine. In habit of growth and bearing character Penryn resembles Maxines, but the fruit is more highly colored. The variety distributed for testing under the designation 26-53 has been named Nestor. This is a result of a cross of Muir with Palora, and is introduced primarily as a drying peach. The fruit resembles Muir in general characteristics and is apparently equal to Muir in drying quality. The Nestor tree appears to be superior to Muir, being of vigorous growth and productive. The variety distributed for testing under the designation 33-21-A has been called Ferida. It has the following parentage: Cling seedling of Leader No. 26-13 x (Palora x Tuskena (Tuscan)). Ferida is a well colored cling, maturing at the season of Tuskena, suitable for eastern shipment and canning. It does not have the excessive red at the pit which characterizes Tuskena, and is relatively free of split pits. The plum distributed for testing as No. 15-23, a cross of Wickson x Santa Rosa, has been named Padre. This ripens immediately following, and somewhat overlapping Santa Rosa. The skin color is a rather bright carmine red, the flesh is yellow, and the quality is excellent.

These introductions have been extensively tested only in the State of California. The three peach varieties are not recommended for the southern part of the State because of their tendency to prolonged dormancy under the conditions there. The Padre plum seems well adapted to the whole State.

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"We find that the drop of nuts since May has been a drop of individual nuts in the cluster with very little drop of entire clusters," he reports from the U. S. Pecan Field Station on July 5th. "The drop has been heaviest on Success and lightest on Stuart. There seems to be no relation of cultural treatment to the amount of this last drop. The drop is about the same on both the trees in Bermuda and those in cultivation. Earlier, we found that the drop between April and May was one of entire clusters, and was significantly heavier on the trees growing in Bermuda. Data which have been taken every few days through the season of the number of nuts remaining on certain marked clusters show that the last drop has coincided with the drop on covered unpollinated clusters."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"The nut drop records at Philema show a very light drop for the week," he writes from the U. S. Pecan Field Station and Laboratory on July 16th. "Those nuts which did drop show about fifty percent infestation with shuckworm, the remainder being small nuts or nuts knocked off by mechanical causes. It is very encouraging to see so many nuts still on the trees, particularly on the Schley. The Stuart trees are still carrying the best crops I have ever seen on them although much lighter than the Schley.

"Extra help is being used to pick up the nuts which are dropping. It is estimated that we have picked up to date enough immature nuts to equal a minimum of 2,000 pounds of mature nuts. The removal of these dropped nuts from the orchard should have a noticeable effect in reducing the shuckworm infestation during the remainder of the season....The loss of nuts resulting from shuckworm infestation is so light this year in comparison with previous years, and with other orchards this year, that we are beginning to believe that strict sanitation will control this insect--in spite of belief to the contrary!"

John R. Cole, Albany, Ga.

"We have just completed making the fourth and last application of spray to control scab, rosette and foliage diseases in our experimental plots located at DeWitt, Putney and Palmyra orchards," he reports July 16.

"Incidentally, in our circular on scab control we stress that a maximum of 4 applications of bordeaux mixture should be made during the season, yet we received a number of letters from growers stating they had made 4 and sometimes 5 applications of the spray--and asking our advice about making a sixth! Of course, we had to remind them to read our recommendations again, carefully.

"Rains fell intermittently but did not interfere materially with our spraying. However most of it came at night lowering the temperature and making ideal scab infection periods.

"This is the season of the year when growers visit our Laboratory in great numbers, getting the latest information on our control measures. This week we had an unusually large number coming from Florida and Alabama, as well as Georgia. Although some of the growers began their spraying late in the season their scab infection was very light and it now appears that they will be able to get commercial control of the scab disease."

NEW ALMOND VARIETIES

The almond breeding work of the Division, conducted in cooperation with the California Agricultural Experiment Station, has resulted in the origination of two new almonds considered worthy of naming and releasing for commercial planting. These are the Jordanalo (formerly known as 8-32) and the Harpareil (8-31). Both were selected from among a large number of crosses between the Harriott and Nonpareil varieties.

Rather extensive tests under varying conditions indicate that the Jordanalo is superior to any commercial almond now grown in California. The tree is vigorous and thrifty, resistant to mites and red spider, produces an abundance of leaves, comes into bearing early, and gives indication of being a regular and heavy bearer. The nuts are easy to harvest and hull, and may be distributed in the shell under the same conditions and through the same channels as the Ne Plus Ultra, being very similar in appearance and size to that variety. The shell is soft, light in color and attractive in appearance. The kernels are excellent for processing, having a desirable gloss and a remarkable texture. It interpollinates very successfully with Ne Plus Ultra and IXL, and often blooms late enough to interpollinate with Peerless and Nonpareil. Under most conditions the Jordanalo blooms along with the Ne Plus Ultra, or slightly earlier, and so is about as subject to injury from spring frosts as is that variety. It is about as susceptible to peach twig borer as Ne Plus Ultra, and is slightly susceptible to brown rot.

The Harpareil (Harriett-Nonpariel) is like the Jordanalo in many ways but is considered slightly inferior in general, though it is rated higher than the Ne Plus Ultra by most observers.

By "releasing" these varieties we mean that with the publication of "Two New Almond Varieties are Released," (Pacific Rural Press, July 9), by Milo N. Wood of this Division and W. P. Tufts of the California Agricultural Experiment Station, all restrictions in regard to their propagation and distribution will be removed. Growers who have planted out trees of these two varieties for cooperative testing, with certain restrictions as to the distribution of propagating material, will now be released from their agreements and allowed to sell propagating wood or nursery trees of Jordanalo and Harpareil as they desire.

The development of these two hybrids is another splendid example of team work, private growers cooperating generously in giving the new almonds a practical test under varying field conditions, and commercial firms processing the nuts and supplying data concerning their value in comparison with leading commercial varieties.

Though the Jordanalo in particular appears likely to become an important commercial variety in California, neither the Bureau nor the California Experiment Station makesor implies any guarantee regarding its performance, or that of the new Harpareil, of course.

FRUIT TREE VIRUS DISEASES

Lee M. Hutchins, Harriman, Tenn.

"The peach crop at Harriman is ripening about 10 days early this year," he writes July 18th. "Brown rot is very severe and is causing much loss. The crop was killed by spring freezes, in the lower areas, but a good crop was made on some of the higher elevations. The entire Elberta crop will be harvested by the end of the present week. Bacterial spot is moderately severe in many trees, causing shotholes and mild spotting of some fruits. A few cases of peach yellows have been seen. The season has been very rainy.

"Our new garage at the Brownwood laboratory has been completed and the new office and laboratory building under construction by the City of Brownwood at the station there is nearing completion and it is expected that the building will be ready for occupancy within about three weeks. A good beginning toward providing for irrigation water from Pecan Bayou has been made."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Due to the extremely dry season we have had in western Oregon the results of spraying tests are not so outstanding as in past years when walnut blight was more prevalent. Notwithstanding, there is a significant difference in the incidence of blight infections in the sprayed and untreated plots. In the Wolf orchard, near Aumsville, Oreg. three applications of bordeaux mixutre 2-1-50 reduced the incidence of infection on the nuts from 17.6 to 6.3 percent. Copper oxalate 1-1/2-50 plus rosin emulsion, 1/2 pint to 100, gave equally as good results, reducing the incidence of infection to 5.9 percent. 'Colloidal-copper' 3-100 and copper oxychloride 4-100 were not as effective, giving 10 and 8.7 percent respectively. A copper-lime-ferric oxide dust (30 percent monohydrated copper sulphate, 68 percent hydrated lime and 2 percent ferric oxide) and a dust composed to equal parts of copper oxalate and bentonite, while not as effective, gave fair control of blight, reducing incidence to 17.6, 8.8 and 9.7 percent, respectively....

"Filbert shrivel, a disorder of the nuts characterized by a browning and shriveling up of the shell and contents continues to develop in abnormal proportions. In one Barcelona orchard near Scholls, Oreg. examined during the week ending July 9th, approximately 25 percent of the nuts were found affected, some trees running as high as 50 percent shrivel. The disorder is worse in the Barcelona and White Aveline varieties and absent or practically so in the DuChilly. The trouble seems to be worse in the poorest section of the orchard, located on marginal or near-marginal soil type. Microscopical examination of typical affected nuts failed to disclose any signs of a parasitic micro-organism in the tissues, indicating that the disorder is non-parasitic in nature."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"One day this week was spent visiting walnut and filbert orchards," he writes July 9th. "Apparently the filbert crop is very spotted, not only between orchards but in individual orchards. A good many of the older orchards are not loaded as they were last year, while a good many of the younger orchards have increased the crop. The walnut crop seemed to be quite generally good and in some cases has been reported as very heavy. So far the walnut crop is very clean, with a minimum of blight.

"The worst factor facing the growers is that since the first of April the western part of the valley has not had over 2 inches of rain, all told. The eastern part of the valley has had much more rain. This is a peculiar condition, as the dry spell begins west of the Cascade mountains. On the coast here they have had the driest June in 45 years. On the other hand, east of the Cascade mountains they are having more rain than usual and in some of these districts where they only get from 5 to 8 inches of rain in a year, they have had as much as 3 inches in June. Goose Lake in eastern Oregon that has been dry for several years is now 35 miles long."

C. L. Smith, Austin, Tex.

"Observations and reports from widely scattered sections of the State indicate a small crop of pecans this year," he writes July 2.

"This is also true for Oklahoma as indicated by reports. The walnut datana is reported as present again this year in North Texas and Oklahoma. This insect did a tremendous amount of damage to the Oklahoma crop last year, and this accounts to a great extent for the lack of blossoming of pecans in that State this year."

ADMINISTRATIVE NOTE

Pay Rolls We find that on some pay rolls the family name is being entered first--Doe, John A. On others it is entered in the usual manner--John A. Doe. Because of this difference in listing names the Bureau Office of Accounts and also the check writers at the Treasury Department have been having some trouble in determing a few cases just which is the family name. To avoid this confusion, please be careful to list names on pay roll just as they would be signed--John A. Doe.

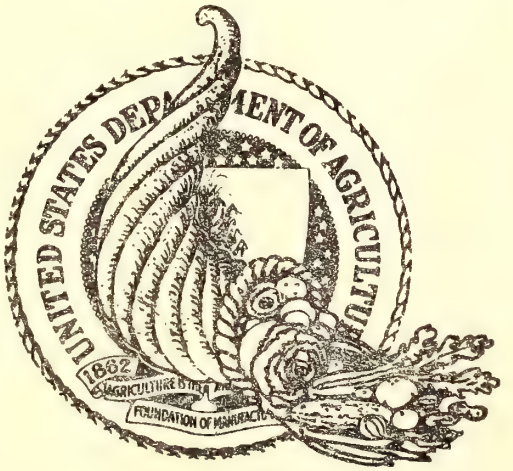
You know, of course, that the full first name must be shown on the pay roll (John A Doe), but where the individual customarily uses his second name that may be substituted (J. Albert Doe). Either the first or second name must be given in full as the Treasury Department will not accept listing showing initials only--J.A.Doe.

Vol. 10 No. 15 August 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. X Washington, D. C., August 15, 1938 No. 16

Date Growing "The light flowering of date palms this season is focusing attention upon the need for a study of the leaf-fruit ratio and other nutritional factors affecting flower production," writes Roy W. Nixon of the Section of Subtropical Fruit Investigations from the U. S. Experiment Date Garden, Indio, Calif. "The freeze of January 1937 resulted in varying degrees of defoliation throughout the commercial date gardens of southern California and Arizona. With the very much reduced leaf area but only a slightly lighter than normal crop in 1937 (most growers thinning a little heavier than usual), a light crop of flowers has been produced in 1938, with no flowers appearing thus far on some palms. That the reduced leaf area in proportion to amount of fruit in 1937 (relatively low leaf-fruit ratio) was responsible for the fewer flowers appearing this spring is indicated by our experimental results.

"In connection with fruit thinning experiment conducted in 1934 and 1935 it was found that with the leaf area relatively uniform the larger the total yield one year the smaller the number of inflorescences that appeared the next spring. These results were reported in the Proceedings of the American Society for Horticultural Science, vol. 34. Additional data have been secured since the freeze of January 1937. Observations in one of the better Deglet Noor date gardens, where palms in full bearing were estimated to have been about 80 percent defoliated by the freeze, are of interest. Eighteen of these palms on which the number of bunches in 1937 was reduced to 4 per palm, in the spring of 1938 bore 10.2 spathes (the 'spathe', surrounding the inflorescence at time of emergence, is here used synonomously with 'inflorescence') per palm, all palms flowering. In contrast 18 adjacent palms, comparable as to leaf area and size of bunches, were allowed to mature 5.8 bunches

SUBTROPICAL FRUIT INVESTIGATIONS

per palm in 1937, and in the spring of 1938 these palms, with a lower leaf-fruit ratio, averaged only 3.2 spathes per palm, with 9 palms failing to show any spathes. Data in the accompanying table are summarized from an experiment with 70 Deglet Noor palms, much less vigorous than those mentioned but also about 80 percent defoliated by the freeze of January 1937. In the spring of 1937 at the time of pollination the inflorescences were given a moderate thinning which consisted in cutting back all strands of flowers sufficiently to remove about 50 of the total number of flowers on each inflorescence. On June 1, about 45 days after the completion of pollination, the amount of fruit was reduced about equally by two methods: (1) in one treatment the number of bunches was reduced; and (2) in the other treatment the amount of fruit on each bunch was reduced by an additional cutting back of the strands.

"YIELD OF DEGLET NOOR PALMS IN RELATION TO SUBSEQUENT FLOWERING

Number of Palms	Treatment June 1, 1937	Yield per palm in 1937-lbs.	No. of fruit bunches matured per palm 1936	No. of spathes per palm 1938
20	8-12 moderately thinned bunches left per palm	65.5	7.5	6.2
20	4 moderately thinned bunches left per palm	39.1	2.9	10.3
20	8-12 bunches left per palm but each bunch thinned twice as heavily as treatment above	49.7	11.0	9.8
10	All fruit removed	0	0	12.7

"It is evident from the data that the number of spathes appearing in 1938 is in inverse proportion to the total yield in 1937. Reducing the amount of crop by reducing either number of bunches or amount of fruit per bunch increased the number of spathes appearing. Therefore, the number of bunches is, as regards the effect of subsequent flowering, important only when uniform thinning makes it an index to total yield.

"From these preliminary data it seems likely that in the date a greatly reduced leaf-fruit ratio one year limits carbohydrate production to the extent that when the demands of the fruit development are met there are insufficient carbohydrates left over for normal flower development. This effect of reduced leaf-fruit ratio may have caused reduced flower-bud differentiation, as found by Magness and his co-workers for deciduous fruits; or may have merely failed to produce the carbohydrates necessary for the enlargement and emergence of flower-buds already formed."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Reports of cranberry damage continue to come in," he writes July 30th. "Mr. Budd had about 150 acres of bog flooded continuously from the 20th to the 27th, and part flooded for 2 more days. The lower third of the Millpond Bog at Double Trouble was under water for about the same time. Many other bogs were in about the same condition. It has not yet been possible to examine these areas but it seems inevitable that the fruit on the vines will be much damaged. Some dams and gates were undermined or weakened by the heavy rain even where little damage was immediately apparent. On the 28th, 4 days after the latest rain, we arrived at a large dam to examine the young cranberries in the bog immediately below, but a half hour before our arrival the new concrete gates, more than 10 feet high, had suddenly dropped about 4 feet and the dam had washed out on either side leaving a gap about 60 feet wide; the bog we had intended to look at was under water.

"The blueberry season is coming to an abrupt end. Most growers were not able to pick their fruit between the 19th and 26th although much of it was ripe at the earlier date. By the time picking began again nearly all of the fruit of the earlier and midseason varieties which had not been picked had become worthless, though most of it still hung on the bushes. The larger part of the Rubel crop, which had scarcely been touched in some fields, lay on the ground and much of the remainder was cracked or soft. Most of the picking this week was confined to clean-up operations. One large grower who estimated on the 19th that his crop would reach well over 5,000 bushels, finished on the 28th with a total of 4,100. Many growers feel that their blueberry account for the current year will be closed with a loss."

"The rainy period did not begin until after most cranberry bogs were fairly well through bloom and the set of fruit is generally fairly good," he had reported July 23d. "During the last few days early rot has begun to appear on the berries, even on many sprayed bogs. The rains have been so frequent that nearly all spraying is far behind schedule. When we sprayed the cranberry seedlings on the 18th and 19th the berries showed no rot whatsoever. Since then, however, water has been standing on many parts of the plantation and the berries have been wet almost continuously since the afternoon of the 19th; as a result many berries are partly or completely rotted. Hand weeding has progressed during nearly the entire period but it has been impossible to take machinery of any kind into the bog to destroy the weeds between the rows of plants.

"The weather during the week ending July 16th was uniformly hot with more or less rain on 5 days; during the week ending July 23, there was rain every day, totalling more than 5 inches...."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"Rot is already beginning to appear on some bogs," he writes from the Cranberry Disease Field Laboratory on July 30th. "This is much earlier than usual. Ordinarily it has not been possible in past years to find rot on the berries before the middle of August even in bad years. It now seems probable that rot will be quite bad this year. The summation of temperatures in excess of 50°F. for May and June is not as high as in other years in which rot has been bad but the amount of rainfall is greater and the duration of time over which the wet weather has extended is greater and that may be the deciding factor.

"In addition to the rots of the types usually encountered several reports have come in of rot that appears to be different, attacking only the smaller berries. Rot of this kind causes the berries to turn red or purple and often sunken areas are evident on the berries. I have never noticed rot of that type in previous years. A considerable number of cultures of berries with this type of rot have been made but it is not yet possible to identify growths obtained from them.

"The set of cranberries on bogs which were in bloom during last week's rain is very poor and even on bogs which had bloomed earlier the set is not always good. The crop for this year may be 100,000 or 125,000 barrels less than last year. This, however, is an advantage as the canneries now have in the freezers as many berries as they can sell in a year.

"Blueberries are now approaching the height of the season. The crop is large this year. Prices, retail, at present are from 30 to 40 cents a quart. The first picking of cultivated blueberries from the State bog planting was made July 23. There is a big crop this year. There is somewhat more 'mummy-berry' than there has been for several years past. The Wareham variety appears to be one of the worst for this disease."

M. A. Smith, Columbia, Mo.

"The Missouri State agricultural statistician this week estimated Missouri's fruit crop at one-fourth normal production due to freezing weather early in April," he reports July 23d. "The condition of apples indicated a production of 392,000 bushels compared to the 10-year average of 2,204,000 bushels. This year's crop is the lowest in many years, and over most of the State a complete failure.

"Peach production is estimated at 186,000 bushels, compared with a 10-year average of 675,000 bushels. Pear production was placed at 73,000 bushels, 227,000 bushels below the 10-year average. It was estimated that grape production was cut at least one third. The freeze killed almost the entire cherry crop. This is the first complete failure of the cherry crop in the past 12 years."

DECIDUOUS FRUIT INVESTIGATIONS

E. S. Degman, Medford, Oreg.

"The pear field station has been enjoying some real summer weather the last couple of weeks, with a maximum of 108°F. and several days of 100° or higher," he writes July 25th. "The situation is rather weird since the smoke from forest fires is so thick that the sun barely casts a shadow except at noon, but the heat seems to get through all right. Our long dry period was broken on July 13 when .1 inch of precipitation was recorded. This was the first time as much as .1 inch of rain had fallen since May 2. The high humidity which has accompanied the warm weather has held the evaporating power of the air down so that trees have been functioning normally.

"In the blight experiment the 'dry' trees were wilted and a few leaves were falling last week so an irrigation was applied, starting July 27. This was the first irrigation which these trees had received this season. A very interesting point turned up in this connection. These trees have for the past several years been part of an irrigation experiment, some of the trees having been irrigated frequently, some moderately, and some lightly. This year, as the soil dried down, the trees which had previously been irrigated 'frequently' began to suffer first, the 'medium' irrigated trees next, and the 'dry' trees were barely beginning to suffer when irrigation water was applied. This is largely due to the fact that the size and leaf area of the trees are largely proportional to their previous irrigation treatments....

"Bartlett harvest will begin about August 10. Indications are that the Bartletts will be of good size, and growers are getting more optimistic about prices all the time."

C. O. Hesse, Davis, Calif.

"To date notes have been taken on over 1,000 seedlings, which represents a little over half of the trees fruiting this season," he writes July 11, reporting on harvesting apricot crosses and evaluating the seedlings in the 'cot seedling block. "Three or four of these have shown some promise, and several have been saved for further observation or because of breeding possibilities. Another 10 days to two weeks should see this work slacking off considerably."

He had written July 2: "We have been very busy with the harvest of crosses and the seedling apricots during the past week. Some 300 of the seedlings were harvested and notes taken on the fruit characters, bringing the total to date to around 700 of the 2,000 trees in the block. Two or three seedlings appear quite promising to date, and several have been marked for further observation, as for use in genetic studies."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

While it is a little difficult to classify under the heading of Cause and Effect, the boys at Wenatchee appear to have had a "hot time" during Ed Smith's absence in Washington, D. C. The heat at Wenatchee and vicinity is reported to have damaged apricots, and Ed can tell you, C. P., that the heat here in the East caused considerable wilting among the "peaches." However, this is C. P. Harley's story:

"The Pacific Northwest has just experienced nine consecutive days of unprecedented hot weather," he writes under date of July 23d. "At Wenatchee the mean maximum temperature was 105°F., with the highest temperature recorded, 109°.* Considerable damage was done to apricots at higher altitudes and apples in the lower districts are showing some heat effects, such as 'buckskin.' Undoubtedly severe injury to apples would have occurred had it not been for the blanket of smoke from forest fires which has considerably reduced the intensity of the sun. The evaporating power of the air has been extremely high during this year, although unfortunately this is not being recorded this year.

"The local Horticultural Office has just completed its crop estimates for the coming season. The estimate for the Wenatchee-Okanogan district has been given as 18,444 cars (approximately 14 million bushels). This is approximately 1,000 cars more than were harvested last year. The estimated crop for Yakima is 12,500 cars, approximately 1,000 above last year. There is a possibility, however, that the cullage from this year's crop may run rather high. However, it has been the experience in the past that these crop estimates have generally been rather low so that in the end perhaps the original figure will be pretty close to the actual crop.

"Mr. Reeves spent several days last week in the Puyallup district studying virus diseases of sour cherries. In his survey of the sour cherry district he estimated that about 15 percent of the trees showed the disease which is locally referred to as 'buckskin.' Since Mr. Reeves' trip to California he is inclined to question the designation of buckskin as being the true 'buckskin' disease which he observed in California, principally because he observed it in sweet cherries in California, whereas in the Puyallup district it seems to affect only the sour varieties. He found two distinct types of the virus disease, and secured many fine specimens for photographing."

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*Speaking of heat: Our colleague, W. W. Aldrich, now located at the U.S. Date Garden, Indio, Calif., where 109°F. temperatures are the rule rather than the exception these days, appends the following explanation of delay to one of his vouchers:

"In May, I put off all I could until tomorrow;
In June, I put off all I could until next week;
In July, I put off everything until next month--
That's why this climate is soothing and restful."

INTANGIBLE SERVICE

Once upon a time there was a parson who became somewhat discouraged at the response made by his congregation when the collection basket was circulated. Finally he appears to have reached the limit of his patience for one Sunday, just as the collectors were about to start, he turned to the congregation and said, somewhat bitterly: "Worshippers who intend to put buttons in the collection basket are requested to give their own, and not pull them off the hassocks."

Another Parson is becoming a little discouraged with certain members of his congregation, if we may judge from Howard E. Parson's report, from the U. S. Pecan Disease Laboratory at Shreveport, La. "In order to try to get the spray program over to the growers that I know are spraying pecans in Louisiana," he writes, "I have written letters advising them of the time to make the prepollination application and the first summer application, cautioning them of the complications with black aphids and drought that are apt to follow the use of bordeaux mixture. These growers were also cautioned about black aphids later, at the time they first needed attention on sprayed trees at Shreveport.

"It is disheartening, then, to find on a recent trip a grower who is attempting to control scab and leaf spot but who has allowed black aphids to get such a start before he attempted to control them, that his trees would actually have been in better condition if he had done no spraying at all. The discouraging thing about a failure of this sort by a grower who happens to be adequately equipped and financed for spraying his pecans is that it is apt to cause certain unthinking growers to lose faith in the spray program, overlooking the fact that they must spray if they are to keep the trees from defoliating prematurely on varieties susceptible to leaf spot, and keep the nuts free from scab on scabbing varieties.

"Some growers would get off to a better start with more personal attention," he concludes. "There are others, I fear, who would have trouble even with personal attention," he adds gloomily.

Now, there is really a silver lining to this situation--from the News Letter's point of view. I mean this report shows rather plainly a type of the intangible service folks have come to expect from our staff members. You see, the report indicates clearly that Mr. Parson is concerned not merely with his own work as assistant pathologist, but with anything that promises to help the pecan growers--hence his warfare on black aphids. This is the attitude toward the job that wins friends for the Division. And if you have an idea that such intangible service passes unnoticed by the powers-that-be, I might add that Mr. Parson's report came to the News Letter with a marginal note: "A good example of intangible service. H. P. Gould."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Laboratory on July 30, he says: "The crop of nuts in the Cairo and Thomasville section is very light and is estimated by growers to be about 40 percent of last year's crop. The Schley and Stuart varieties have the heaviest crops, with Money-maker, Teche and Moore next in order. However, scab is going to cause heavy losses to the Schley variety especially where growers are not spraying to control this disease.

"The shuckworm and other insects are causing heavy drops in some orchards especially the Palmyra and Van Cise orchards. Large and I picked up 591 nuts under one tree of the Schley variety in the Palmyra orchard that had been sprayed with 3-1-50 bordeaux mixture and 1-50 wettable sulphur. This was an average tree in the plot and the nuts had fallen over a period of four days. An examination disclosed that 78 percent of the nuts contained the shuckworm larvae, and 28 percent of the remainder showed insect injury of some kind. In the Taylor orchard where we had an unusually heavy infestation of the shuckworm last year the damage from this insect has been very light so far."

He wrote earlier: "I have mentioned in previous reports the change in procedure made by growers seeking advice on controlling pecan diseases. In recent years instead of writing letters to the laboratory here, growers are using the long-distance telephone almost exclusively! They can sit at their homes, 100 to 200 miles distant from Albany, and describe the scab disease, even counting the spots on the nuts, giving varieties, etc. and we can advise them pretty well as to the time that the next spray application should be made. We consider this real progress!"

B. G. Sitton, Shreveport, La.

"The first part of the week was occupied in working on a procedure for photographing leaves from the deficiency studies, in cooperation with Dr. Alben and Dr. Hammar," he writes under date of July 18th.

"Some of these leaves have yellow and brown coloring in addition to the green, and it is desirable to make photographs to show these differences. The best results so far have been with a deep red filter on panchromatic film, but even this leaves much to be desired. An attempt will be made during the coming week to photograph on kodachrome film in natural color, from which it is hoped that separation negatives can be made so that color prints can be secured.

"The remainder of the week was occupied working on influence of cultural practices on tree growth and yield..."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week was spent in the Silverton district checking on the results of tests carried on in that region," he reports for the week ending July 23d. "Results of tests carried on in this district are more outstanding than trials carried on in most other regions of the State, as this region had more rain in May and June. Thus, in one test carried on in a Vrooman Franquette orchard near Silverton, three treatments of bordeaux 3-1-50 applied in (1) the early prebloom stage, (2) the late prebloom stage, and (3) the early post bloom stage, reduced the incidence of blight on the nuts from 36.4 percent to 11.8 percent. Copper oxalate 1-1/2 - 50 gave even better control under these conditions, reducing the incidence of infection to 7.8 percent. In tests carried on in another orchard in this district, three applications of bordeaux mixture reduced the incidence of blight infection on the nuts from 17.4 percent to 3.4 percent. Copper oxalate 1-1/2 - 50 gave practically as good results under these conditions, reducing the incidence of infection to 4.9 percent.

"The latter part of the week was spent in the Eugene and McMinnville districts checking on the results of spraying tests carried on in those regions. In general the results of spraying tests there are not so outstanding as those in the Silverton region because of the sparse rainfall in May and June, which is reflected in the relatively small amount of blight infection in the unsprayed parts of the orchards. There was, however, one notable exception. In tests carried on in a certain Vrooman Franquette orchard near Eugene, Oreg. three applications of bordeaux 2 - 1/2 - 50 reduced the incidence of blight infection on nuts from 19.1 percent to 2.4 percent. Copper oxalate 2 - 50 gave even better control of blight, reducing the amount of blight to less than 1 percent-- 0.9 percent."

He had written July 16th: "The forepart of the week was spent in the field in the vicinity of Roseburg, Oreg. taking results of studies on the control of walnut bacteriosis. In tests carried on in a Wiltz Mayette orchard in this district, two applications of copper oxalate 1 1/2 - 50 applied (1) in the early prebloom stage, and (2) in the post bloom stage of development gave excellent control of blight, reducing the incidence of infection on the nuts from 25.7 percent to 2.1 percent. The foliage on the trees sprayed with this preparation showed no evidence of spray injury.

"For the past 11 days maximal temperatures of 95° F. or over have occurred at most points in Western Oregon. On Wednesday of this week a maximal temperature of 104°F. was recorded at Corvallis."

NUT INVESTIGATIONS

C. L. Smith, Austin, Tex.

"During the week ending July 9th, trees treated with root inducing chemicals before transplanting were dug up and data taken on root formation. Indications of excellent responses were obtained where fairly high concentrations of the chemicals were used. Of special interest was the rooting responses of trees 10 years old which are considered to be very difficult to transplant. These had profuse new root formation and were in excellent condition."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (Vegetable Crop Investigations)

"The difference observed with respect to disease resistance in some of the varieties and selections of tomatoes has been quite striking, Marglobe and Glovel being conspicuously good in resisting wilt, but apparently no better than the average in resisting leaf roll. In the cultural plots, 'Treatment E', consisting of no pruning but light tying up, has apparently given fruit a higher quality and more uniformly in size than has other treatments."

N. H. Loomis (Small fruit investigations)

"Several varieties of grapes were harvested this week but due to earlier conditions the yields were exceedingly low," he reports July 23d. "The varieties harvested were Manito, Delaware, Concord, Caco, Clinton, Ives, and Ronaldo. The harvest dates were from 8 to 23 days earlier than a year ago. Frequent rains during the past two weeks resulted in a large number of cracked berries on Concord. This variety ripened uniformly and had very few green berries in the clusters. (This fault is characteristic of Concord vines, especially of low vigor, when grown in the South.)"

ADMINISTRATIVE NOTES

Alien labor

During the past month the Business Office mailed to those employees likely to be concerned a copy of Personnel Circular 65, "Employment of Aliens." Section 11 of the "Work Relief and Public Works Appropriation Act of 1938" provides that no alien illegally within the limits of the United States, and no alien who has not, prior to the date of enactment of the resolution, filed a declaration of intention to become an American citizen, shall knowingly be given employment on any project provided for under the act.

If you have this circular, please read it carefully; and if you have not received a copy and may have occasion to employ help, ask the Business Office to send you Circular 65 so that you may have the latest regulations on employment of aliens, etc.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

C. O. Bratley, New York, N. Y.

"During the shipping season for California plums and cherries, now drawing to a close, these fruits were in good condition on arrival in New York City," he writes from the Market Pathology Laboratory on July 22. "However, during that time apricots from California showed more brown rot than we had ever seen in shipments of this fruit. An average of decay for all cars during the season would be around 6 percent. In many of the packages on the auction display one-fifth of the fruits were affected.

"Because of the apparently successful shipment of unwrapped Florida oranges during the past few seasons, the California Citrus Exchange is now conducting tests with unwrapped fruit to find effect on decay, general appearance, bruising, and trade reaction. In the two dozen test cars shipped thus far the boxes of unwrapped fruit have weighed from 1 to 1-1/2 pounds less than those of wrapped fruit, there has been no difference in the appearance of the fruit nor in the amount of decay, but there has been more crushing of the fruits along the nailed edges of the top. Trade reaction has not been consistent. Generally the unwrapped fruit has brought from 1 to 5 cents less per box than the wrapped fruit. This difference has been even greater with some lots of high quality fruit, for apparently the dealers handling high quality fruit want it wrapped, while chain stores and markets handling fruit of lower quality prefer unwrapped fruit because of the ease with which it can be displayed.

"Some time ago the Erie Railroad, alarmed at increasing claims for 'part out' packages at time of delivery following the auction, instituted a system of policing on the pier which has been very effective. Most of the loss was found to be due to pilfering by truckmen, stevedores and buyers rather than to the shaking of fruit out of the packages during handling. Out of town railroad police who report to a vice president rather than to the local agent were brought in, and much publicity was given to the campaign. It is reported that during the first two months the Erie made savings on claims amounting to $10,000 above the cost of the extra policing."

CHEYENNE HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"A severe hail storm on July 13 did considerable damage to experimental plots," Superintendent Hildreth reports. "Powers reported that his tomatoes were set back at least two weeks and that pollination work, which had been started, would of course be delayed at least two weeks. His plots were damaged just as badly as they were last year when it hailed July 15. The hail ruined muskmelons and watermelons in Babb's and Kraus' plots and did considerable damage to tomatoes at Torrington as well as at the station. Chrysanthemums were heavily hit by hail and Dr. Benedict reported that grasses growing in flats froze to death by the hailstones freezing after falling into the flats."

TRAVEL BY COMMERCIAL AIR LINES

Memorandum No. 767, dated July 18, 1938, from the Office of the Secretary, points out that Section 204 (c) of Public No. 706 - 75th Congress, creating a Civil Aeronautics Authority, approved June 23, 1938, is as follows:

> "Travel by personnel of the United States Government on commercial aircraft, domestic or foreign, including travel between airports and centers of population or posts of duty when incidental to travel on commercial aircraft, shall be allowed at public expense when authorized or approved by competent authority, and transportation requests for such travel may be issued upon such authorizations. Such expense shall be allowed without regard to comparative costs of transportation by aircraft with other modes of transportation."

A letter addressed by the President to the heads of executive departments, establishments, and agencies, contains the following:

> "In order to hold to a minimum the cost of air travel that would be in excess of such cost under the existing Standardized Government Travel Regulations, it is my desire that all requests for travel authority of this character be given the closest scrutiny and that such travel be permitted only upon the written authorization of the head of the department, establishment, or agency for which the travel is to be performed."

In compliance with the expressed desire of the President, specific authorization by the Secretary, prior to performance of travel, will be required on the travel order or letter of authorization covering travel by air lines under the section of the Act above quoted. This requirement is in addition to the requirements contained in regulation 3422 of the Regulations of the department.

Under authority contained in paragraph 8, Standardized Government Travel Regulations, transportation by air lines will continue to be allowed without specific advance authorization or subsequent approval when the cost thereof less (1) the amount of subsistence allowance saved by more expeditious travel, and (2) the amount of the salary of the traveler for the time thus saved, does not exceed the cost of rail or steamer transportation and Pullman and/or stateroom fare between the points of travel.

Actual cost of air-line transportation will continue to be allowed in any case (a) where it is satisfactorily shown that no other usual means of public transportation are available, or (b) when the Secretary determines in writing, either prior or subsequent to performance of travel, that the use of air-line transportation is to the advantage of the United States because of the existence of an emergency or exigency which could not have been anticipated or postponed.

ADMINISTRATIVE NOTES

Long distance Telephone calls — Long distance calls may be made only when the nature of the business to be transacted is urgent, cannot be adequately transacted by mail or telegraph, or is of such a character as to require personal contact. Toll charges in excess of 50 cents must be accompanied by a certificate showing bureau, division, name of person making call, name of party with whom communication was held, points between which a service was rendered, date of call, number of minutes, charge as to initial period, additional minutes, and total; type of call (station-to-station, person-to-person, report charge, messenger); and statement that the call was official.

So it seems well at this time to call attention to the fact that it is necessary to report on Form No. AD 102 all long distance telephone calls costing more than 50 cents. This form should be signed by the person who made the call and may be initialed by his section leader. The last place for signature must not be signed as this is reserved for the head of the Division and Mr. Gillette is the only one designated to sign for Mr. Gould in this case. One original and one carbon should be submitted. A supply of these forms may be obtained from the Business Office.

Household Goods — The Acting Comptroller General in a decision of July 12, 1938 (A-95159) held in effect that since the weight allowance for transportation at Government expense of the household goods and personal effects of employees of the Department of Agriculture is not fixed by statute or regulation but is governed by the order directing the transfer, the transfer orders must, hereafter, clearly specify whether the weight allowance authorized therein is inclusive or exclusive of the weight of packing and crating, or, in other words whether the weight allowance is gross weight or net weight.

This supplements the instructions contained in Department Regulations No. 3451. Employees maintaining copies of the Regulations should record this circular by appropriate cross reference notation in their copy of the Regulations.

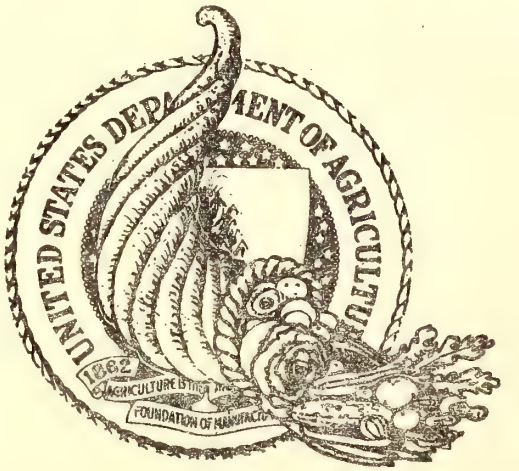
Foreign Postage — Foreign postage is no longer required on mail addressed to the following United States possessions and foreign countries: Alaska, Canada, Chile, Columbia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guam, Guatemala, Hawaii, Honduras, Mexico, Newfoundland (including Labrador), Panama, Paraguay, Philippine Islands, Puerto Rico, Samoa, Venezuela, and Virgin Islands. Printed matter or communications being sent to persons in these countries need not be accompanied by a request for foreign postage, but may be sent under frank.

Vol. 10 No. 16 August 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D.C., September 1, 1938 No. 17

Flowers "If a man finds himself with bread in both hands," says an Eastern proverb," he should exchange one loaf for some flowers, since the bread feeds the body, but flowers feed the soul." Another excellent reason for our interest in the breeding and testing of ornamentals is that they have joined the ranks of big business. When an industry shows an investment of nearly three hundred million dollars, with an annual gross return of $131,000,000, it needs high class servicing!

"The improvement of flowers by breeding in the United States is being done by thousands of amateurs, by florists, nurserymen, flower seedsmen, and by State experiment stations and the United States Department of Agriculture," Dr. S. L. Emsweller reported to the 12th International Horticultural Congress at Berlin and Essen, August 12-20, 1938. "During recent years there has been a steady improvement in the technique used and there is also apparent a much better appreciation and use of some of the fundamental principles of genetics. Two achievements in the field of disease resistance in flowers have already been made, namely, resistance to wilt in asters and to rust in Antirrhinum. These diseases had made the growing of these flowers rather unpopular in many sections of the United States. Recently also the rust of Antirrhinums has appeared in Europe, and reports from a trial conducted last year in England by the Royal Horticultural Society proved the high resistance of the American strain."

Dr. Emsweller and Dr. H. A. Jones, in 1933, introduced the rust resistant strains of snapdragons that have been further developed by public and private plant breeders who have preserved the resistance while improving the floral quality by crossing with desirable floral strains that are not resistant. Dr. Emsweller discussed these, and also the development of asters resistant to wilt, work in which Wisconsin University specialists pioneered.

"The comparatively recent growth and spread of the garden club movement in the United States has also been an active stimulant to flower breeding," Dr. Emsweller pointed out. "More and more the flower growers of the country are demanding improved types. Recently the American flower seedsmen have organized an annual trial for new varieties of flowers, 'The All-American Trial,' and each year seeds of new varieties are sent in and distributed to many sections of the country where they are grown and judged by committees appointed by the Seedsmen's Association. The more outstanding novelties are given awards and receive considerable attention in the various flower magazines.

"Unfortunately most of the commercial flower breeding in the United States is being done in a few local areas. It has only recently become generally understood that superb selections in one section may not be suitable for many other parts of the country. As a result of this environmental influence there is now noticeable a gradual increase of flower breeding in some of the State agricultural experiment stations and in the United States Department of Agriculture.

"At the present time, active flower breeding is under way at some of these stations, while a considerable amount of work is being done by seedsmen. At the experiment stations the work is mostly designed to produce a particular variety that will be adapted to a certain set of conditions. For instance, it is now well known that many varieties of carnations only reach their fullest development in certain sections of the country. This is also true of rose varieties and many other flowers. Thus a new variety of merit on the Pacific Coast of the United States may prove worthless on the Atlantic Coast.

"The State experiment stations are also doing a real service by affording a stimulus for improving the technique of the amateur and commercial flower breeders. This has come about slowly and quietly, and it is now possible to see accepted and established breeding practices in actual daily usage on most flower seed farms."

As an evidence of the entrance of ornamentals into the field of big business, it is interesting to note that census figures show more than 13,000 florists producing plants as a business both under glass and in the open. The number of commercial nurseries is more than 7,000, with most of them devoting some space at least to the production of ornamentals. In addition, some 2,000 farms are engaged in growing bulbs commercially, and there are many farms, especially in California, that produce seed of flowering plants for sale. Many of the flower seed farms have adopted improved methods of isolating plants to insure self-pollination and are making use of the backcross method of controlled breeding. With the better understanding of the advantages of the backcross method we may expect to find also an increased appreciation of the importance of basic genetic principles and a rapid advance in flower breeding efficiency.

PUTTING ALL THE CHIPS ON THE TABLE!

A boy employed in one of the big chain store systems turned up with a shiny new automobile and the manager, fearing that the youngster was running too deeply into debt, asked how he could afford such a car on his $15.00-a-week salary. "It's easy," explained the lad, nonchantly. "There are more than 200 people employed here--and every week I raffle off my pay envelopes at 25 cents a chance."

We wouldn't like to hear of anything of this sort happening in our Division, but we do think that our colleague R. C. Wright, and associates, are to be commended for their efforts to place all their chips on the table. You see they are potato chips--and R. C. and his colleagues are doing all they can to make sure that all of the chips are satisfactory for placing on the table.

"Potato chip manufacturers and restaurants are demanding '60°' potatoes for an exacting public," says a release from our Press Service. "Only potatoes held at this temperature have the cooking quality which gives chips--and French fries--a light cream color, and the most desirable texture and taste. Because of the lack of potatoes suitable for chips some large manufacturers have been compelled to install their own storage houses.

"Many farmers have written to the Department asking how they might store their potatoes so that they may sell at least a portion of their crop for the higher price offered by this special trade," goes on the Release, sent to newspapers August 21. "Experiments show that when potatoes are held at 40°F. or below too much of the starch changes to sugar. The potatoes carmelize when cooked in hot oil. The chips come out a dark brown or black color and with a burned taste. Chips from potatoes stored at close to 60° were desirable in every way. Flavor and texture of steamed, boiled, or baked potatoes stored at a temperature as low as 40° were fair, however, if not tasted immediately after those stored at higher temperatures. For this reason farmers should not go to the extra expense of storage house heating if the potatoes are to be sold through regular trade channels.

"It should be remembered," warns Mr. Wright, "that potatoes held at 50° or above will begin to sprout much sooner than if held at 40°. Therefore, for stock to be used the latter part of the winter it would be better to store first at 40° or a little higher and then raise the temperature to 50° or 60° about 3 weeks before the potatoes are to be used. In this way the higher sugar content developed by storage at 40° can be reduced."

Hew to this line--and let the chips fall where they will!

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS

Fresno, Calif. "During the past month the activities of the Fresno station have been those occasioned by investigations on cantaloup handling and shipping, plum maturity and shipping, and pear maturity," says the report for August 1. "The Imperial Valley was visited the first week in July at about the end of the commercial cantaloup shipping season. Prices had been generally unsatisfactory for cantaloups despite steps taken to curtail shipments by eliminating undesirable sizes. The lack of demand for cantaloups on eastern markets was generally attributed to cool weather in the East during most of the shipping season.

"Methods of handling and shipping were about the same as in previous seasons with perhaps more attention being given to thorough precooling than in any preceding season. Some mildew appeared on the resistant 45 melon this season, but field men reported that little commercial damage was done. All but some of the early covered acreage was planted to this variety. It again had the fault of growing sizes larger than the buyers wanted in any quantity. The melons cut while in the valley and those received on the Fresno market of this variety have been uniformly good in quality; as a matter of fact, more dependable in quality than some of the 'home-grown' melons now on the market.

"Some preliminary tests were begun this year with shipping plums, the State inspection service supplying the samples of fruit. The maturity standards for plums are now based on color only, the changes taking place while the fruit is held at a temperature similar to that in a refrigerator car enroute to market being recorded for a series of maturities on each of the important shipping varieties. Similar comparisons are being made between early and late picked fruit of the same variety.

"The first of the early fall pears, Hardy, moved from California to England last week. According to pressure test, they were about as mature as those shipped last season, meeting the 11 pound pressure test required by the maturity definition of the Federal State Inspection Service. This season records have been kept of the blooming dates of several varieties in orchards in the Santa Clara Valley. Hardy reached a passable maturity in 110 days; Bartlett pears in the Santa Clara valley reached 19 pounds pressure in about 105 days. From previous experiences with the Bartlett in the Santa Clara valley, a canning Bartlett district, not a shipping district, this pressure test would indicate satisfactory maturity. Blooming was very irregular this spring, particularly in the Bartlett variety, making it impossible to set definite blooming dates fpr an orchard or even a tree.

"The grape season is getting under way, with Thompson Seedless, Red Malaga, and a few Rebiers moving to eastern markets. An industry control plan was approved calling for the diversion of about half the crop of wine grapes to brandy, thereby preventing their being dried and depressing the raisin market or being pressed into wine and further increasing the large stock of wine on hand."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"For the past two weeks notes have been taken on the fruiting of grape seedlings," he writes August 6th. "So far approximately 1,000 fruiting seedling vines have been checked and outstanding vine and fruit characters recorded. These seedlings range from selfed standard varieties and selfed seedlings of controlled crosses, to back crosses and new seedlings from more recent crosses. Much information has been obtained on the transmission of various vine and fruit characters. One interesting fact has been the outstanding dominance of the Panariti foliage. Seedlings of crosses, back-crosses, and selfed seedlings of the Panariti mutation (seeded) have all shown the characteristic foliage of the Panariti parent.

"Increasing numbers of seedless seedlings have been noted. F2 seedlings of some previous crosses have given a considerable number of 'currant-type' seedless grapes.

"In selfed seedlings, white color, as has been previously known, has been a pure type. White varieties produced only white fruited seedlings. Light red varieties selfed produce nearly half white and half red progeny. Dark red varieties selfed may produce a few purple black progeny and more white and red progeny. So far no homozygous black variety has been noted. All the black varieties so far selfed and recorded have produced a few white fruited seedlings, with the remainder of the seedlings varying from red and purple black to black.

"It has been interesting to note that the old standard vinifera varieties selfed have produced progeny quite 'true' to the parental type. Foliage and fruit type have been quite near the parental type but variation has been noted in vine vigor and time of ripening. It would appear that early or late ripening types could be obtained by selfing any of the standard varieties. This one fact may be of considerable commercial importance as in the case of the 'Red Malaga' early coloring and ripening is desirable. Some of our selfed seedlings of this variety appear to color and ripen much earlier than the parent."

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station of August 13th he says: "On August 8 I went over carefully our one half acre spray plot which was set out last spring with yellows-free Blakemore strawberry plants to check up on yellow plants and found 1 plant. This makes a total of 9 yellow plants which I have removed from this plot. I have inspected nursery rows where these plants were grown, but have not seen any yellow plants there. I also inspected the three rows of yellows-free Blakemores in our disease plot, but did not find any more yellow plants. I found 2 yellow plants in this plot in June."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Cranberry fruit is increasing rapidly in size although the crop remains small," he reports August 13th. "Insects, particularly grasshoppers and crickets, are causing more or less damage as is usual on a small crop. A number of growers are dusting or spraying for grasshopper control. A few growers are applying late bordeaux sprays to their bogs because of the many times the plants have been flooded during the season. ...The last few quarts of blueberries have been picked and shipped and the fields are now entirely deserted."

He had written earlier: "On August 2d we visited the blueberry seedling plantation at Weymouth with Mr. Doehlert to make experimental applications of nutrients to badly spotted bushes. Mr. Doehlert agreed that the leaf-spot did not have the appearance of that resulting from potash deficiency nor a resemblance to any deficiency symptoms of which he is aware.

"On our way back from Weymouth we visited again the commercial field in which mildew had been active early in June, and examined the leaves of those varieties on which the mycelium can no longer be found. None of these commercial varieties was spotted as severely as the worst seedlings, but it was impossible to distinguish between the spotting of the commercial varieties and that occurring on the less severely affected seedlings. Dr. Bergman, who made the trip with us, is in agreement on this point."

Lee M. Hutchins, Brownwood, Tex.

"The new laboratory building constructed by the City of Brownwood at the Pecan Station is practically completed," he writes August 5.

"It is really a beautiful and most satisfactory building. We will be very well taken care of there. Today the automatic-natural-gas-operated furnace is being tested out. The furnace proper is in the attic of the building, and the warm air enters through openings in the ceilings of each room; return circulation to the furnace is provided through a large opening in the wall near the floor in the hallway.

"The sewage disposal system is yet to be constructed and connected. We believe the building will be entirely finished by the first of September.

"Dr. C. E. Smith moved from Austin to Brownwood during the past week, and is storing his laboratory furniture and equipment in the new building, pending completion of the structure...."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Examinations of healthy Bosc, Anjou and Bartlett pear trees that were budded with Bosc buds showing the 'measled' bark condition and pitted fruit have just been completed," he reports August 15th. "The trees were budded in 1936. During 1937 definite symptoms of the disease were lacking on the healthy limbs, although in some instances the leaves at distances from 1 to 14 inches below or above the diseased buds appeared similar to the symptoms exhibited by leaves suffering from a lack of water. Now in their second season, Anjou and Bosc limbs show very striking evidence that the disease has been transmitted from the original buds. Anjou and Bosc fruits on these limbs have become severely pitted for varying distances from the buds. A few of the Bartlett limbs have produced suspicious fruit, but the disease as exhibited by the two former varieties has not been seen for certain. It is not certain whether the disease found on Forelle pears, in which definite virus-like markings occur on the leaves, is the same trouble as the Bosc disease.

"The absence of leaf symptoms and the appearance of the trouble two years after budding seems contrary to the usual behavior of virus troubles and offers some interesting problems to the physiologist. The writer feels certain that the disease is of the virus type, not alone from these experiments but also from observations in orchards of known history. In two such orchards, on young trees budded to the Bosc variety, nearly every tree is showing the pitted fruit. The bud wood in these cases was obtained from orchards and trees showing the fruit pit.

"Treatment of diseased trees with boron, copper, zinc and manganese compounds failed to correct the trouble, although boron appeared to stimulate weak trees in a few cases."

C. P. Harley, Wenatchee, Wash.

"Fruit growers of the Northwest are certain to be faced with a third brood codling moth problem this year unless something unforseen happens," he predicts July 13th. "About the only possibility of escaping this eventuality will be the intervention of steady cool weather in September and up to harvest time. The worms were mature and out of the fruit from a week to over two weeks earlier than last year and possibilities for late season worm damage are in the offing....

"The apricot harvest is in full swing. The market started out fairly strong but at the present time it has almost reached the point of collapse. Today I believe the offer is $5.00 a ton. Very few growers will pick their fruit at this price. The crop is quite large and the quality of the fruit is very good."

DECIDUOUS FRUIT INVESTIGATIONS

George F. Waldo, Corvallis, Oreg.

"A trip was made August 11 to a grower at Eugene who had a very nice planting of Wazata (Rockhill) everbearing strawberry. Quite a number of everbearing strawberries are now coming on the market, of which this variety is the best. Due to the very dry weather, a number of strawberry growers in the valley are beginning to use irrigation, particularly the overhead sprinkler types."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS

Geo. P. Hoffman (vegetable crop investigations)

"Considerable interest has been noted here and there in the growing of fall tomatoes, and the problem of obtaining good plants for planting the fall crop is one that gives more trouble than is commonly thought," he comments in his report for the week ending August 13th. "Consequently, terminal, medial, and basal cuttings were made and put down in sand in the cutting benches in the greenhouse. Rooting and growth were satisfactory in the case of the terminal; fairly satisfactory in the medial; and rather unsatisfactory in the basal cuttings. Terminal cuttings hardly wilted and rapidly developed plants of excellent quality. The basal cuttings were not only slow to begin growth but the new growth developed weak and spindling."

N. H. Loomis (small fruit investigations)

"The grape variety Extra, formerly carried under the name Florida Beacon, was harvested the week ending August 13th. The first muscadines are beginning to ripen. These are Eden, James and Scuppernong."

He had written August 6th: "During the past week the following varieties of grapes were harvested: Carman, Champanel, Herbemont and Lenoir, all of which make a vigorous growth here. This season was exceptionally wet during the latter half of July and the first week in August, with rainfall on 13 of 24 days. Both Herbemont and Lenoir, which are small juice grapes, high in both sugar and acid, rot readily if the clusters are wet while the fruit is ripening. Consequently the fruit this year was almost a total loss. This has happened for three consecutive years with Herbemont. Since Herbemont is one of the most vigorous growing varieties, it is probably of value here mainly for breeding work and perhaps as a stock since summer rains in this section invariably occur during its ripening period."

J. M. Lutz (fruit and vegetable storage and utilization investigations)

"Studies were conducted during the week ending August 6th on the influence of ripening temperature on Le Conte pears. This variety of pear appears to behave in a manner similar to that of Kieffer except that the Le Conte seems to have a somewhat higher optimum temperature requirement."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Excellent control of the twig blight phase of the filbert blight disease was secured in tests carried on in two bearing filbert orchards located near Woodburn, and Albany, Oreg., respectively, by the application of an early fall spray of bordeaux mixture 4-4-50 made during the latter part of August or the forepart of September 1937 before the occurrence of the first fall rains," he reports for the week ending August 6th. "Where the fall application was omitted the incidence of infection in the trees was much greater, although a late fall and an early spring application did appear to have resulted in a limited reduction in the incidence of twig blight.

"The brownstain disorder of filberts, a non-parasitic disorder of the fruits, is becoming increasingly prevalent and is now present in orchards in practically all sections of the Williamette valley. However, the disorder is not anywhere near as prevalent nor as serious as in 1931. It is estimated that about 2 percent of the 1938 crop of nuts are affected with this trouble.

"Results of cross-inoculations made during the forepart of July were also taken during the week. Relatively large, well defined lesions up to 50 mm. in their maximal diameter dimension were present about wound inoculations made in walnut stems of current growth with 5 different isolates of Phyt. juglandis, the walnut blight pathogen, while no lesions or only very small dead areas not exceeding 2 mm. in diameter were present about punctures made with 4 different isolates of the filbert blight pathogen. Results of these cross-infection studies further indicate that distinct differences in pathogenicity between these two pathogens do exist, even though they can not be separated by morphological or physiological methods.

"The weather bureau at the college has recently released some data on the weather during the spring and summer that are very enlightening. The records reveal that this is one of the warmest and dryest summers on record. No rain of any consequence has fallen at Corvallis since May 11. .....Temperatures have been considerably out of line, also. The mean July temperature here is normally 65.5°F. while for July 1938 it was 70.4°. The highest temperature was 104°, one degree below the all-time record."

He had written earlier: "Results of studies carried on in connection with the control of walnut bacteriosis in the vicinity of Newberg and Forest Grove, Oreg. are not as outstanding as trials at Silverton and Roseberg because of the scarcity of rainfall during the critical period of infection. Notwithstanding, the effects from spraying in most orchards in this region were sufficiently beneficial to at least pay for the cost of spraying....."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"Growers continue to visit our experimental plots here, driving long distances in most instances," he writes August 13th. "They are especially interested in our scab and rosette control experiments. We are also continuing to receive long distance telephone calls concerning our scab control program, black aphid infestation, etc. In most instances the growers are well pleased with their control, but occasionally, especially in Alabama and Mississippi, their control is not as good as ours.

"On Saturday Large and I were called to Cordele to investigate a serious condition of pecans. We found an orchard, consisting of the Stuart and Schley varieties, and the Schley were badly affected with the early stages of rosette, confined mostly to mottling and bronzing of the foliage. Most of the Stuart trees intermingled with the Schley were free of rosette and very thrifty. This was a condition that surprised the grower as well as Large and myself since usually the Stuart is our most susceptible variety.

"About 1,000 acres of Schley trees are being sprayed for scab and occasionally rosette control in the vicinity of Cordele and excellent results are being obtained. At least one grower has about 98 percent control. This grower is topworking Frotcher and Delmas to the Schley variety, which is very unusual since most growers are topworking the Schley trees to scab resistant varieties. The Schley trees are loaded with nuts around Cordele, the nuts being in clusters of 3 to 5, resembling the Mobile variety. Very little drop has resulted from the shuckwork or other causes."

C. E. Schuster, Corvallis, Oreg.

"At one time there were 250 forest fires known to be burning and probably a good many more that could not be spotted due to the heavy smoke," he writes for the period ending July 30th. "Coming down the Columbia River highway last Saturday the smoke was so heavy that the sun barely cast a shadow and it was impossible at times to see across the river. The hot weather has caused a minimum of damage in the walnuts from sunburn, where it was expected that there would be considerable loss. The walnut crop looks heavy but everyone is wondering what the effect will be of the extended dryness and heat. The heavy crop is taking its toll now on the winter damaged trees that were hurt in October 1935. These trees are collapsing right and left with the load that is on them and the wood shows the effects of the freeze....The filbert crop is very spotted and in the older trees not as heavy as was expected. However, the large acreage of young trees seems to be fairly well loaded."

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

Writing from the U.S. Pecan Field Station on August 13th, he says: "A remark that one of the progressive growers make to me will be quite interesting. His statement was to the effect that the discovery of a zinc control for rosette was so valuable as to justify all of the expenditures that have been made in pecan research by the Department to date!"

Max B. Hardy, Albany, Ga.

"Many of the buds put in nursery trees on July 25th have already forced growth up to 3 inches in length," he reports from the U.S. Pecan Field Station and Laboratory on August 13th. "These buds were all wrapped with 'Parafilm G' tape which may partly explain this unusual result, and without doubt, the heavy rainfall received during the past three weeks has had an influence....Chestnut harvest has started in earnest. To date two trees have yielded 21 and 13 pounds respectively with only a portion of their crops harvested. Other trees are just beginning to mature their nuts. The first harvest this year was made on August 1st, while last year the first harvest was made August 26th."

CHEYENNE HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Pollination work in connection with genetics experiments is now at its height," says the report for the week ending August 6th. About a dozen men have been added to the crew to assist in this work and it has been necessary to have part of the crew work over week-ends in order to keep abreast of the work. A majority of the tomato plants have been set and about 60 percent of the pumpkins have set since the hail of July 13. Some early sets are beginning to change color. Taking the bloom data on tomatoes after the hail was completed and analysis of variance on set data was begun. Efforts were being made by Bruce Lyon to get root initiation in cucurbits and raspberries by the use of synthetic growth substances.

"Babb and Kraus started descriptions and classifications of turnip varieties, and finished harvesting lettuce in the pruning experiment. They also started harvesting lettuce in Dr. Thompson's block. Babb returned to the station on August 2 after a 10-day trip to Logan, Utah, and to vegetable cooperators throughout Wyoming. At Logan and in Utah he visited with Drs. Blood and Shapovalop and had an opportunity to look over much of their experimental material.

"Isolations of specimens of diseased plants of various kinds, including squashes, beans, peas, potatoes, and alfalfa, collected from the plots at the station and at Torrington were being made by Bohn, who also did some selection work on tomatoes. Analyses of cauliflower leaves and roots to determine the carbohydrate content were made by Jerry Brown."

ADMINISTRATIVE NOTES

Per Diem Employees — The Director of Personnel calls the attention of officials and employees to the provisions of Public Resolution No. 127, 75th Congress, Third Session, approved June 29, 1938, providing for the payment of compensation to regular employees of the Federal Government whose compensation is fixed at a rate per diem, per hour or on piece-work, on national holidays. This resolution says:

> "Resolved by the Senate and House of Representatives of The United States of America in Congress Assembled,' that hereafter whenever regular employees of the Federal Government whose compensation is fixed at a rate per day, per hour, or on a piece-work basis are relieved or prevented from working solely because of a holiday such as New Year's Day, Washington's Birthday, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day, or any other day declared a holiday by Federal Statute or Executive order, or any day on which the departments and establishments of the Government are closed by Executive order, they shall receive the same pay for such days as for other days on which an ordinary day's work is performed.
>
> "Sec. 2. The joint resolution of January 6, 1885 (U.S.C., title 5, sec. 85) and all other laws inconsistent or in conflict with the provisions of this act are hereby repealed to the extent of such inconsistency or conflict."

We do not have many employees likely to come within the provisions of this resolution, but in case of doubt in any instance, the matter should be taken up with the Business Office promptly for decision, to avoid delays in handling pay rolls or salary vouchers.

Political Contributions — "I am informed that some employees of the Department are receiving requests for contributions to the campaign funds of political organizations," says Memorandum No. 771, dated August 1, 1938, from the Office of the Secretary.

"The Civil Service Act of January 16, 1833, provides as follows:

> 'That no person in the public service is for that reason under any obligations to contribute to any political fund, or to render any political service, and that he will not be removed or otherwise prejudiced for refusing to do so.'"

"Employees are reminded that any such contributions made by them are presumed to be entirely voluntary."

ADMINISTRATIVE NOTES

Transfer of Surplus items

There is a story concerning a girl who accompanied a very bashful young man to the beach one Saturday afternoon. She encouraged him but he remained shy. Finally as they sat in the moonlight, with the time for returning home near at hand she suddenly turned to him and demanded: "Kiss me!" The young man was very much startled. "I--I can't," he apologized. "My mouth is full of sand." "Then, for Heaven's sake swallow some of it," directed the girl, sharply. "I've never met a man who needed it more."

This, of course, naturally brings us up to a discussion of the disposal of surplus material. Walter Roney says that in connection with the transfer of surplus property or supplies of any nature from other Departments or Bureaus to this Division, report should be made promptly to the Business Office by the receiving office, listing all such material, whether books, equipment or supplies, furnishing serial or other identifying numbers if they appear on any of the property, the title and author of book, etc. This report is required in order that the Bureau Property Officer may close the transaction with the Division of Purchase, Sales and Traffic, and is also necessary in completing our own inventory record. Cooperation in rendering these reports, promises Walter, will be appreciated.

Ribbon Spools

The Procurement Division of the Treasury Department has again requested, through the Division of Purchase, Sales and Traffics of this Department, that we save all our typewriter ribbon spools and empty stapling spools. When removing empty spools from typewriters or stapling machines, then, they should be wrapped up and sent to the Business Office. When a sufficient supply has accumulated they will be passed along to the Supply Section of the Department.

Repairs

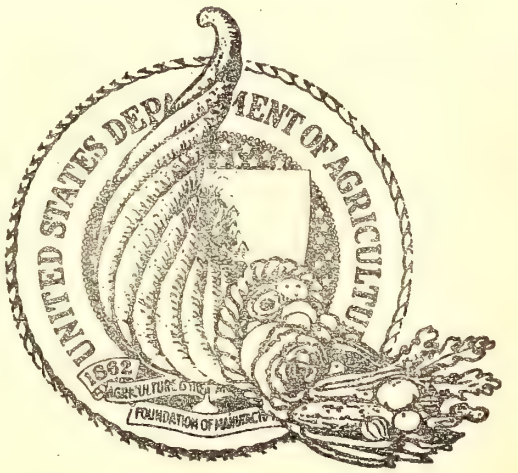
Vouchers covering cost of repairs to buildings, or other real property, automobiles, trucks, or equipment rented by the Government from private individuals and concerns, very often fail to contain a reference to the contract under which buildings or other real property, automobiles, trucks or equipment are rented, says a memorandum from the Director of Finance. "In order to obviate the necessity for withholding credit in the audit by the General Accounting Office for expenditures so made, due to failure to establish the propriety of the payment from Government funds, it will be required hereafter that, on all vouchers covering claims for costs of repairs to buildings or other real property, automobiles, trucks, or equipment rented or leased from private sources, a reference be made to the specific rental or lease agreement showing the obligations of the Government."

Vol. 10 No. 17 September 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., September 15, 1938 No. 18

Market Diseases of Crucifers and Cucurbits. Miscellaneous publications No. 292, "Market Diseases of Fruits and Vegetables: Crucifers and Cucurbits," by Glen B. Ramsey, James S. Wiant and George K. K. Link is now available. Because of the colored plates, necessary for an adequate illustration of the diseases and blemishes discussed, and the resulting expense for printing, we were able to order only a small edition for free distribution and these copies are needed for market inspectors, county agricultural agents and other Federal and State workers who use them in connection with their official duties.

The Superintendent of Documents, Government Printing Office, Washington, D.C. has a supply available to meet the demand from the general public, or for extra copies needed by Federal or State workers. Orders should be sent to him, payment to be made by check or money order made payable to him--or by coin, at sender's risk. Five publications are now available in this important series:

Miscellaneous Publication No. 98, "Market Diseases of Fruits and Vegetables: Potatoes," 30 cents a copy;

Miscellaneous Publication No. 121, "Market Diseases of Fruits and Vegetables: Tomatoes, Peppers, Eggplants," 20 cents;

Miscellaneous Publication No. 168," Market Diseases of Fruits and Vegetables: Apples, Pears, Quinces," 40 cents;

Miscellaneous Publication No. 228, "Market Diseases of Fruits and Vegetables: Plums, Cherries and Other Stone Fruits," 20 cents; and

Miscellaneous Publication No. 292, "Market Diseases of Fruits and Vegetables: Crucifers and Cucurbits," 45 cents.

The colored illustrations are also issued in the form of posters, printed on cardboard, 7-1/2 x 12 inches, at 5 cents each.

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Certain filbert growers from the State of Washington who were present at the annual summer meeting of the Western Nut Growers Association held at Corvallis and Scholls, Oreg. August 17 and 18, respectively, stated that from 25 to 40 percent of the filbert crop was affected with brownstain. If this is true, brownstain is present in much greater amounts in Washington than in Oregon orchards."

He had written August 13th: "During the week another series was started in the greenhouse on the influence of bordeaux mixture on transpiration, using beans as indicator plants. Results of earlier studies have now been worked up and the indications are that the use of highly alkaline bordeaux mixtures on full grown walnut foliage results in an increase in transpiration. Thus, in one series the untreated plants used on the average 1.56 cc of water per square centimeter of leaf surface over a 10-day period, those sprayed with bordeaux mixture 2-1/2-50 used 1.61 cc of water per square centimeter, while those sprayed with bordeaux 2-2-50 used 2.1 cc of water per square centimeter over the same period. The results of preliminary studies on the effect of spraying on transpiration, using beans and sunflowers as indicator plants, are not as conclusive as with walnuts; in fact, they are quite conflicting which would indicate that different plants respond differently to bordeaux mixture."

Max B. Hardy, Albany, Ga.

"Pecan trees are suffering from the heat and drouth and unless relief comes soon nut filling may be affected," he writes from the U. S. Pecan Field Station and Laboratory on August 27th. "During the past two or three days I have seen pecan trees wilting, a very unusual occurrence. Some defoliation is taking place where cultural conditions have not been entirely favorable but none has been noted yet at Philema. Pecan shucks are wilting to some extent also. Growth of cotyledons in the nuts is progressing to date.

"Somewhere between 95 and 100 percent of all buds unwrapped and examined on topworked trees are alive. Again this year at least 99 percent of the buds wrapped with 'Parafilm G' budding tape are alive. In general, there are more sprouts below the buds wrapped with cloth than below those wrapped with the paraffin tape.

"The leaf 'scorch' data show that shading, mulch, and irrigation all reduce the incidence of 'scorch' with the untreated trees showing rather heavy defoliation from the trouble. The evidence strongly indicates that 'scorch,' as it occurs here, is closely associated with water relationships in the plants."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"In most of the orchards it looks as if the Jordanolo almond has much the heavier crop this year," he writes for the period ending August 13. "The Harpareil in practically every instance has less of a crop. This is good news because the Jordanolo is the best of the two nuts commercially. To date no red spider injury has been seen in the Jordanolo trees examined, although in adjoining trees of other varieties injury was noticable. On some of the Harpareil trees in an especially badly infested spider region in Los Angeles County, some damage was noticeable. I am wondering whether the Jordanolo will stand up against the attacks of red spider another month. If so, it will prove even more spider resistant than I expected.

"I spent one very profitable day with Dr. L. C. Cochran going over the mosaic trouble in Riverside County. I was amazed at the extent of this trouble. On the various stone fruit trees the mosaic disease is very extensive upon the various almond orchards in that district and the outlook for almonds there seems rather dark. It was especially valuable to me to learn the different detailed visible characteristics of this disease in the field.

I later examined numerous almond orchards north of Riverside County for the disease but it was clear that the trouble on the leaves found in some of the orchards was entirely different from mosaic disease and due, I believe, to some soil difficulty or trouble of that nature. I was glad to find that the disease was absent on the almonds noticed north of Riverside County....

"I learn largely from conversation that a number of the different varieties of chestnuts came out with sterile catkins this year again but the very last catkins were fertile. This corroborates our own studies made there a year ago. The same peculiarity was noticed this year on some of the Mollissima trees in this part of the country. This may mean that varieties such as the Quercy, which we thought produced sterile catkins under all conditions, can produce fertile catkins. In other words, it seems quite probable now that what we thought was a varietal characteristic is greatly modified and influenced by environmental conditions."

GRADUATE SCHOOL

Over 100 courses are announced in the Department of Agriculture Graduate School program for the year 1938-1939, now available at Room 4090, South Building (Telephone Br.317). The facilities of this school are open to all Government employees qualified to take the work. It cooperates with universities and educational institutions in certifying to them credits earned by work done in the Graduate School. The registration last year reached 4,000 in 70 different courses.

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.,

Writing from the U. S. Pecan Field Station on August 20th he said: "The trees which were sprayed twice in the spring with bordeaux mixture still retain a good proportion of their leaves, whereas the trees which were not sprayed with bordeaux have lost from one-half to three-fourths of their foliage at the present time. Those trees in the unthinned block have lost more than the trees in the thinned block. The trees in the thinned block which were sprayed last year with bordeaux still have a fair crop of pecans, but the trees in the unthinned block and the trees which were not sprayed with bordeaux last year do not have enough pecans to warrant harvesting."

F. N. Dodge, Robson, La.

"Early in the season vein spot so severely attacked the Success trees that it was doubtful if the Success crop this year would be of marketable quality," he writes from the pecan field station on August 29th. "However, Success trees in cultivated plots have made a large amount of second growth which has remained healthy and present indications are that the crop will be large and of good quality. This is not true, however, of the Success trees in the Bermuda plots. The nuts in these plots seem to be even smaller than last year, and foliage is very unhealthy."

He had written August 20th: "To date 26,400 gallons of spray material have been applied with about 14 tanks more needed to finishing spraying the orchard. The cost will be about $180.00 and when divided among the 1200 trees will amount to 15 cents a tree, which is not much when it is remembered that this spray probably will be the difference between getting or not getting a crop next year, with average crop of 30 pounds per tree the expected crop for next year. The increasing amount of spray material required for each spray shows how large the trees are getting. There is one place in the orchard where the limbs of adjoining trees are only 10 feet apart with trees planted 50 feet apart.

"Defoliation is much in evidence at the present time, especially on Stuart and Moneymaker trees which have not been sprayed with bordeaux, and on all varieties growing in sod. Stuart trees not sprayed with bordeaux have less than half their foliage at this time. Bordeaux sprayed trees which have been cultivated have more than 95 percent of their foliage and have a healthy appearance. Defoliation is three to four weeks earlier this year than last."

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NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"We are now practically through the fifth month of the dry season during which time we have had less than 2 inches of rainfall," he writes under date of August 27th. "This rain largely fell during the month of April, in scattered showers.

"Of the fruit trees, the prune orchards and the cherry orchards are in the worst condition. The older prunes orchards are now in a very poor condition, with their leaves cupped and curled. Cherry trees are beginning to shed the leaves in some cases. Of the native vegetation, ash and the maple are rapidly shedding leaves in many sections, while the underbrush is reddish or yellow, according to different species.

"Of all the fruit trees, walnut trees look the best at the present time, contrary to the appearance a year ago. The foliage is dark green in most cases, except in the very old orchards where they are badly crowded, yellowing is on the way. It would appear on examination in some cases, though, that tip shriveling and quarter shriveling will be found at the time of harvest. Also, wherever the husks are spotted dark or a yellow under color the same spotting is very apt to appear on the kernel.

"Filberts are looking worse every day. The percentage of blanks is noticeably high, while the harvest seems to be abnormally early. Those orchards on marginal soil are now yellowing in color, while a great deal of scorch is to be noted on the leaves.

"This dry season has played havoc with many of the farm crops. Spring grain in a large proportion of the cases was pastured off as it did not pay to harvest it. Many times when the farmers did harvest, they did not get the seed back. In the Umpqua valley where we were this week, the prune crop is relatively light for Italian prunes, with the top price of 2-1/2 cents for 30-40's. They predict that a good many of the Petite prune orchards will not be harvested. In fact, the only crop that seemed to be good was the walnut crop."

C. L. Smith, Austin, Tex.

"There is an unusually heavy infestation of green aphis on pecans in this territory this year, and reports from other sections indicate that they are prevalent over most of the pecan territory of the State," he writes August 20th.

"The trees on the station here are relatively free from leaf diseases as compared with last season, although some downy spot is showing up on the Burkett. The trees were all sprayed once with bordeaux in the spring and have been sprayed twice with zinc sulphate. The relative absence of fungus diseases is attributed to the spray."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"Class counts in our randomized plots indicate that 3-1-50 bordeaux mixture is giving better control of the scab disease than either the 3-1-50 bordeaux plus 1-50 summer oil emulsion, or 3-3-50 bordeaux mixture," he writes from the U. S. Pecan Disease Field Laboratory on September 3d.

"These class counts also indicate that the prepollination spray consisting of 2-1/2-50 bordeaux mixture is going to be an important factor in controlling scab this year. Approximately 70 percent more of the nuts on the plot receiving the prepollination spray are in classes 1 and 2 than there are on the plot that did not receive this spray. The plot receiving the 2-1/2-50 bordeaux prepollination spray plus three applications of copper oxalate is not controlling the scab as well as the straight bordeaux mixture.

"While the drought and heat wave has been broken by showers in some localities, it is still pretty severe over the country generally. I accompanied Hunter, of the Soils Department, to Thomaston on Tuesday and our observations were that orchards that have not been cared for have lost most of their foliage. That is especially true of such varieties as Moore, Mobile, and Moneymaker, varieties that have weak foliage even under normal conditions. Even oak trees have lost their foliage where they are growing on ridges and hillsides. A visit to orchards south of Albany, accompanied by other members of the laboratory staff here, disclosed similar conditions."

SWEET CORN

Writing in the Journal of the Royal Horticultural Society (England) for June, 1938, André L. Simon discusses some "unusual vegetables"--unusual, that is, so far as their availability to the average English consumer, under present conditions, is concerned. His essay, contains a hint as to the best method of handling sweet corn on the table!

> "The best way to deal with Sweet Corn," he says, "in the privacy of one's home is to boil the cobs for about twenty minutes and eat them mouth-organ fashion with salt, pepper and fresh butter on them, gnawing at the corn with one's front teeth, rabbit-like. They never taste so good in any other way. However, where the evening is a party and hands must be kept off, there are many other ways of dealing with Sweet Corn. It can be made into soups and puddings, or served as a vegetable, sauté in butter or with cream...."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Borgman, East Wareham, Mass.

"The summer meeting of the Cape Cod Cranberry Growers' Association was held here last Tuesday," he writes for the week ending September 3d. "This was the 50th anniversary of the organization of the Association.

"The annual crop forecast which is always announced at this meeting placed the crop for Massachusetts at 365,000 barrels as against 565,000 for last year, and the total crop for the United States was estimated at 527,000 barrels for 1938. Although the bloom was up to the average or better in Massachusetts this year, the set was very poor, due probably to long continued rain during the flowering period. Rot is worse than usual this year, which will somewhat reduce the size of the crop."

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on September 3d he says: "Early varieties of cranberries are more or less colored and picking has been going on at a few locations during the last week. The general harvest will not start until the 6th. Smaller number of pickers are being hired than last year and becuase of the short crop the harvest season will be finished earlier than usual, if the late varieties color rapidly.

"Work on the seedling plantation has been nearly completed. Most of the fruit has started to color. Nearly all of the berries seem to be unusually soft, and field rot has appeared in many of the seedlings. There is, however, very little defoliation.

"On one bog on which the winter flowage was held until July 5th, and which was subsequently flooded for several days in August by the heavy rains, fungus defoliation has appeared on a large scale and has taken most of the leaves off the young uprights in certain spots. So far as our observation goes, this is an unusual occurrence on an old bog, but of course this was an unusual season.

"Powdery mildew continues to develop on certain varieties of blueberries, but has not caused any leaf drop that we have seen. We have plants dusted with both copper and sulfur fungicides for mildew control. The bushes in most fields have made a very vigorous growth during the summer but are now showing the need of rain on lightsoils."

(continued)

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J. (continued)

"The Blueberry Coöperative Association held a special meeting on the 17th at which it was reported that the commercial crop shipped through the Association from New Jersey and North Carolina this year amounted to approximately 30,000 bushels, of which about five-sixths was packed in pint cups. The returns to growers were slightly less per quart than last year.

"Powdery mildew is active on the blueberry foliage of certain varieties in most fields," he continues, writing under date of August 27th, "but the leaves have not been perceptibly damaged and there has been no defoliation. Additional chemical applications were made to selected spotted bushes in the Weymouth Seedling Plantation. Fungicidal applications were made to plots in commercial fields.

"Final bordeaux sprays were applied to the cranberry seedlings and to cranberry spray plots. Diseased cranberry leaves were collected from numerous bogs and examined. Non-bearing bogs which received as many as two sprays during the season show very little defoliation, while the trouble is severe on a number of unsprayed plantings. There is considerable fruit rot now present in many commercial bogs, which was rather to be expected as a result of the weather.

"We have found water damage on a number of bearing cranberry bogs. On one old bog in a rather low state of vigor, which was submerged for several days on each of three separate occasions, the growing tip of practically every variety was killed back for perhaps an inch and side buds have started growth, making the bearing of crop in 1939 practically an impossibility; fungi were not visible on the dead tips at the time of examination. In a more vigorous bog which was under water for approximately the same time, no dead tips were found and the uprights appeared to be setting fruit buds normally; plants affected with false blossoms, however, were discolored and noticeably weakened, indicating that with the exception of the loss of the present crop, the result of the floods may have been more good than bad.

"The official estimate of the present cranberry crop for New Jersey is 75,000 barrels, or less than half that of last year, but the feeling among the growers is that even this figure is not likely to be reached."

There is considerable damage by insects, particularly grasshoppers and crickets, as is expected with a very short crop. Some bogs are showing moderate to rather large amount of rotten fruit. The weather has been fair to moderately cool for the week ending September 3d, the only rain being in the early morning of September 1st.

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Maturity of Panariti and Monukka grape varieties was about a week earlier than last season, but still somewhat later than an average season," he reports August 20th. "The Panariti ripened 84 days after blossoming at a mean shade temperature of 80.4°F. The Black Monukka required 91 days and a mean shade temperature of 80.39°F. from blossoming to maturity.

"Grape Breeding.--From grape seeds to fruit in one year may be a reality. Seeds planted in the greenhouse in January produced seedlings from which buds were taken and budded into vigorous stock vines. Vigorous shoots were produced from these inserted 'T' buds. Some of the most vigorous shoots were cut back and defoliated forcing out 'next year's ' buds. Shoots from such buds have now produced six inches or more of growth and are showing small blossom clusters. While we do not expect to select the best seedling in this manner, it will be a possibility of eliminating undesirable seedlings, such as, seedlings with reflex stamens, seeded fruit if seedlessness is the object, and any undesirable color. Thus if it is desirable to speed up grape breeding, a generation in two years from the time the cross is made is in prospect and from our present indications is a strong possibility."

C. P. Harley, Wenatchee, Wash.

"We are now in the middle of the Bartlett harvest, and what a harvest it turned out to be!" he writes August 22. "Never was the return to growers as low as it has been this year. In general, the quality has been good; in fact, I believe better than last year, although many orchards have shown the effect of rust mite infection rather badly. It is rather interesting, although disconcerting from an experimental standpoint, that the percentage of Bartlett pears showing the disorder called 'pink end' or 'yellow end' is not as prevalent by far this year as last; in fact, our experimental plots on this trouble in the Cain orchard will in all likelihood give us no results whatsoever insofar as treatments are concerned. Plots of Bartlett pear trees last year which showed on an average of ninety percent cullage from this trouble, are not running over five percent this year. I have not checked up as yet the situation in other localities throughout the district, but in the Wenatchee area proper this seems to be the situation, and leaves us as much, if not more, in the ari than ever before as ot its cause.

"Weather conditions up to the present have been ideal for fruit growth and color development. King David and Jonathan apples are already showing, in some cases, sufficient color to pick. The first picking of King David will probably start next Thursday. All indications now point to very highly colored fruit from this district this year."

ADMINISTRATIVE NOTES

Freight Express — In the News Letter of February 1, 1938, vol. x, n. 3, p. 36, employees were cautioned not to place a value in excess of $50.00 on freight or express shipments, regardless of the value, as at that time the General Accounting Office was returning transportation vouchers on which extra payment had been made for valuation charges, ruling that such charges were actually an insurance premium, which could not be paid from money appropriated for the Department.

Under date of August 18, 1938, Bureau of Plant Industry Memorandum No. 1005 to Heads of Divisions, cites a recent ruling of the Acting Comptroller General to the effect that while the Government "Losses in Shipment Act" prohibits the insurance of Government shipments except under certain conditions subject to specific authorization of the Secretary of the Treasury, it would not appear to prohibit payment of the transportation rate calculated to minimize the risk of loss, destruction or damage to articles of special and unusual value by placing a greater measure of responsibility upon the carrier, thus inducing the care which would minimize the risk of loss.

It therefore appears permissible now to place a valuation in excess of the lowest or "released" value on express shipments of articles of peculiar or unusual value as distinguished from ordinary merchandise, such as delicate and valuable scientific instruments, in order to receive special handling by the carrier, but in no event shall the value placed thereon exceed the actual or replacement cost of the article shipped.

Of course, shipments of ordinary supplies or equipment should continue to be made at the lowest or "released" valuations.

MATURITY TEST FOR PEAS

Canning Age for July and August contains a comprehensive discussion of Dr. S. L. Jodidi's maturity test for peas.

While this method was developed primarily to determine the maturity of the raw material for pea canners, it is of interest to all who need a simple, rapid and accurate method of determining the specific gravity of insoluble materials for purposes of quality control. Dr. Jodidi points out that it requires but 15 to 20 minutes as contrasted with the usual 2 to 3 days necessary with other methods; and the test can be made in the field if necessary, on the rear platform of a truck, say, since the apparatus is such that any canner or grower of peas, without technical training, can make the test readily.

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AMINISTRATIVE NOTES

Radio Activity — A woman who had called to see a clergyman announced that she wanted to consult him about her husband's feet. "His feet!" exclaimed the astonished clergyman. "I'm afraid you have come to the wrong doctor. I'm a doctor of divinity; the chiropodist has his office down the street." The woman shook her head. "It's your help I need," she asserted. "His feet have gone astray."

What we mean is: Don't let your feet go astray on the radio lanes. Department employees are not permitted to appear personally on commercially sponsored radio programs or to supply information exclusively for such programs. Appearances on such programs violate Department Regulation 1215, prohibiting endorsement of commercial products by Department employees, and Regulation 1231, prohibiting the appearance of Department employees in commercially sponsored radio broadcasts except for the issuance of emergency information on such matters as forest fire control, etc. The matter is brought up now because the National Broadcasting Company has cut 15 minutes from the National Farm and Home Hour, a public service program in which this Department has been cooperating for 10 years, and sold that time to a commercial organization that plans a program of agricultural information.

Under the circumstances, employees of the division are cautioned against appearing on commercially sponsored radio programs, or supplying information exclusively for such programs. Commercial firms, of course, are entitled to the publications of the Department, just as are any other citizens, but they are not entitled to supplant or interfere with either radio or press in disseminating information prepared and issued by the Department as a public service. If you have the least doubt about any proposition of this sort put up to you, get advice from Washington before acting.

Transportation Requests, etc. — Employees who have occasion to use transportation requests carried over from the previous fiscal year (or years) should make sure that the appropriation mentioned is corrected to read for the current fiscal year. The letter of authorization number, too, must be corrected to conform to the letter under which the travel is being performed.

Don't forget to send to the Business Office the memorandum copies of transportation requests as soon as the originals are issued. In a few instances such copies have been sent direct to Mr. W. P. Cox of the Bureau's Office of Accounts. Such action delays handling of the traveler's expense account.

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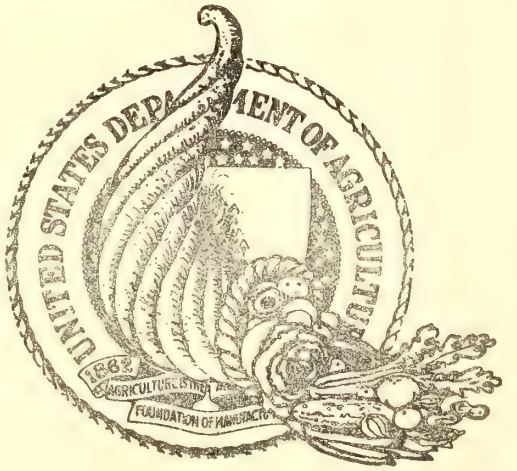
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., October 1, 1938 No. 19

Onion Breeding

"By inbreeding and then massing it is possible to improve most of the commercial varieties now in existence," said Dr. Henry A. Jones, discussing onion breeding in a paper presented at the meeting of the Vegetable Growers' Association of America, Detroit, Michigan, the latter part of August. "By selection, inbreeding and massing, we merely eliminate undesirable characters. New characters are not introduced."

Years of work with onions has resulted in a vastly improved technique for this breeding work. Once we thought we could get the desired results by selecting desirable bulbs and inbreeding, but we found that while we got uniformity we lost vigor, with a resulting lowering of yield. By inbreeding we were able to isolate lines that were uniform in bulb shape, flesh and scale color and had good keeping qualities, that is, but we found it necessary to cross these inbred lines in order to restore yielding ability.

Crossing to restore vigor is done by massing the inbred lines and intermingling so that the maximum amount of crossing occurs. At first we made the mistake of starting with too few lines. When only a few lines are used there is too much crossing between related plants and vigor is not completely restored. We found that it was necessary to start with a large number of bulbs so that we could do drastic roguing and still have left a large number of unrelated lines for massing. It took a good many years to find that out. Dr. Jones worked on this problem from 1922 to 1936 at the University of California, before coming to us, developing the California Brown 5, a much improved Australian Brown. This was essentially a tailored-to-measure creation, meeting to a surprising degree the specifications of California seedsmen.

In starting an improvement program with most of the existing commercial varieties, Dr. Jones pointed out, it is best to select at least 200 bulbs of the ideal type. These are inbred or selfed by bagging the flower heads, the seed from each plant being kept separate and planted separately the following year. These lines should be tested in the district in which they are to be grown. Undesirable lines are rogued out in the field, at time of harvest, and in storage. Only 50 to 60 of the best lines are selected for further inbreeding and the others are massed and intermingled to secure the maximum amount of crossing to restore vigor and secure a quantity of seed for commercial trials.

In view of the tribute we pay to the insects, supplying them with food and lodging, it is gratifying to learn that Dr. Jones has found a way to put some of them to work. As a matter of fact, he now depends upon insects for important aid in connection with his onion breeding. Formerly making onion crosses was a very tedious and slow procedure, but now he has worked out a method by which the insects take over the crossing activities.

In the onion fields of the West blow flies are among the principal pollinators. Observing their efficiency, Dr. Jones has proceeded to domesticate them. For controlled crosses he raises his own flies, this to make certain that they are not contaminated with the wrong kind of onion pollen, and the pupae are placed in cold storage until the flies are needed for pollination work. To their credit it must be conceded that their cooperation has been almost invaluable!

Incidentally, they are helping develop onion varieties resistant to thrips. The injury due to thrips over a period of years undoubtedly causes greater loss to the onion crop than all other insects and diseases combined. We brought in onion varieties from all over the world and tested them along side of our own sorts to see if we could find some that showed resistant to thrips. Two of them--one from Persia and the other an Oriental sort, the Nebuka--were found to be highly resistant, though neither is commercially valuable. Their resistance arises from their leaf characters. In domestic varieties such as the Red, White and Yellow Globe, the leaves have a flat side and opposite leaves have these flat sides fact to face and at first close together. In this area, protected from predatory insects and rain, the thrips feed, propagate and flourish.

In the Persian and Oriental varieties, on the other hand, we have leaves that are round in cross section, offering but a small area in which thrips remain protected. Also, the leaves emerge at wide angles and are far apart vertically, giving thrips very little protection. So for thrip resistance we are seeking to develop good commercial sorts with this round leaf character, hoping to obtain some on which the thrip population will be so small that very little damage will be done.

SUBTROPICAL FRUIT INVESTIGATIONS

J. R. Furr, Pomona, Calif. (Over-Irrigation Injury of Citrus.)

Discussing over-irrigation injury to Citrus, he writes: "Numerous instances of injury to Citrus supposedly resulting from too frequent irrigation or from the application of excessive amounts of water have been reported in Southern California. The symptoms of 'over-irrigation injury', as it is known locally, are death of small roots, reduction in top growth, production of sparse, small, yellowish foliage, and decreasing yields of fruit. Over-irrigation injury is not confined to soils that have a water table near the surface, but is common on heavy loams and clays that apparently drain to field capacity within a few days after an irrigation. Trees showing over-irrigation symptoms are not uncommon on the extremely well drained sandy, gravelly out-wash-fan soils.

"It has been supposed that the maintenance of high soil moisture, even though no water table may be present, so reduces the air space of the soil that the roots are injured as a result of poor aeration. Moderate to very severe drying out of the soil by withholding irrigation water has been widely practiced in orchards as a remedy for over-irrigation injury. In some cases this treatment has been reported to be effective in restoring the vigor of the trees. In other cases apparently no benefits resulted. In some areas of heavy soils, subjecting the trees to the long periods of water shortage necessary to dry out the soil has resulted in greatly reduced fruit sizes and reduced yields of marketable fruit. The total losses resulting from the disease and the treatment have in some areas been of considerable economic importance.

"In the course of our irrigation experiments carried on since 1932 in cooperation with the U. S. Bureau of Agricultural Engineering on several soil types in Pomona Valley, we have taken samples of soil air from 'wet' and 'dry' plots for analysis for O_2 and CO_2 in the hope that such data might indicate the probable importance of aeration as a factor in the development of over-irrigation injury.

"In rapid draining, sandy loam soil the oxygen content of the air from the top five feet of soil of the wet plot varied from 18 to 20 percent. The minimum value being attained within 10 hours under the application of water. Obviously, there was little difference in the percentage of oxygen in soil air of the wet and dry plots. Samples from the top five feet of a well drained but heavy loam showed oxygen percentages of 16 to 20 for the wet plot and above 20 for the dry. The lowest values were found 4 to 9 days after an irrigation.

The poorest aeration was found in a rather slowly draining, medium loam, which was kept very wet by irrigations at 10 to 15-day intervals for two months. The O_2 content of the 2-5 foot zone fluctuated from 13 to 17 percent, with a minimum value of 10.8 percent.

SUBTROPICAL FRUIT INVESTIGATIONS

J. R. Furr (continued)

"In laboratory experiments with rooted lemon cuttings in clay loam soil it was found that transpiration was slightly reduced and that root growth ceased at oxygen percentages of less than 4, but there appeared to be no influence of oxygen supply over 8 percent. Roots were not killed by maintaining the oxygen at values of less than 0.1 percent for two weeks, but new growth was killed within three days by flooding the soil with water. "The results of the field and laboratory tests suggest that on rapidly draining soils, even when kept relatively wet for long periods, injury to roots from oxygen shortage is not very likely to occur. No conclusion may be drawn from these experiments as to the relationship between O_2 shortage and over-irrigation injury, since the trees in none of the irrigation plots developed over-irrigation injury. What has been called over-irrigation injury on the light sandy soils may have resulted from poor nutrition caused by mottle leaf, and by excessive leaching of the soil. It is also possible that keeping the soil wet favors the growth of organisms in the weakened root systems.

"This summer we established plots specifically for work on over-irrigation injury on clay adobe; a soil type on which over-irrigation injury has been especially prevalent. The trees are Valencia oranges which were showing severe over-irrigation injury several years ago. For the past three years they have been subjected to severe drying and are reported to have shown considerable improvement in vigor. However, the yields were very low and most of the fruit was below marketable size at harvest this season. Treatments are scheduled to start next spring. We are hoping that we can produce typical over-irrigation injury on the wet plots in this orchard, and that we can arrive at something more than a wild guess as to the specific cause of the injury."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"Tuesday of this week Mr. Philip and I visited the University of California Field Station at San Jose where we looked over several hundred pear seedlings being grown in connection with a blight-resistant program. About 50 seedlings have been propagated from selections out of about 45,000 seedlings grown from open pollinated Winter Nelis and Hardy varieties. Selections are also being made from an additional 6,000 to 8,000 similar seedlings now growing. "The selections made to date have proved resistant, or nearly so, in the San Jose area as indicated by artificial and natural infection. However, most, if not all, of these selections will fall by the wayside in evaluating the fruit for commercial possibilities, which is the undertaking of the Pomology Division. There is also the possibility that many of these selections will not prove so resistant in more pronounced blight sections, such as the Sacramento River section."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Records of the peach tree dendrometer show that the trunk is still growing rapidly," he reports September 19th. "The rate of growth is not quite as great as it was two weeks earlier, but is much more rapid than the rate during May, June and early July, when terminal growth was taking place. Since trunk growth was initiated in spring after the appearance of leaves, it will be interesting to see whether it ceases before or after defoliation. Indications are that trunk growth is controlled by the presence of foliage on the tree, and next year, after a complete year's records under normal condition have been obtained, some studies on the effects of defoliation are planned.

He had written September 12th: "The 500 cultured peach seeds from selfed limbs of Early Hiley and No. 11 were removed from the refrigerator last week. They had been exposed to cold treatment for approximately three months. Almost all of the seeds showed evidences of germination, and many had etiolated epicotyls touching the caps of the bottles, although maintained at a 40° temperature. Apparently seeds of these varieties do not require as long a cold treatment as most varieties....About 50 Shalil seedlings were budded to Yunnan (P.I. 55886). The Yunnan stock was obtained from Prof. Blake last winter and it is planned to replace the present Shalil block which is a miscellaneous assortment of freestone and cling seedlings with the other promising nema-resistant stock, Yunnan. Possibly the latter will bear more regularly under our conditions than Shalil...."

September 6th he reported: "Recently a grower from near Thomaston visited the laboratory and told of a cover crop system he is using in his peach orchard to prevent erosion. Korean lespedeza is grown in the summer and in the fall after the lespedeza has gone to seed rye is planted. In the spring the lespedeza comes up in the rye and later the rye is mowed giving the lespedeza its chance. Thus there is a cover crop on the land practically all year and no danger from fire in the lespedeza in winter. I saw the orchard, three years old, late in August and the trees did not seem to have quite the vigor they would have were they under cultivation.

"Several growers have already started pruning their bearing trees, starting in on those blocks that have lost most of their foliage. Some defoliated trees in commercial orchards have a few open blossoms on them. Leaf rust, which usually causes defoliation of peach trees at this time of year, does not seem as severe this year as last, except in certain localities. The disease is particularly bad in my seedling test block. Bacterial spot is responsible for defoliation of the Canadian V's and Sims Cling, and the N. J. selections have lost many of their leaves from this cause. Spray injury has grown progressively worse in some orchards and the trees are more than 50 percent defoliated."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Bartlett pear picking is just finishing in the upper valley and the cannery is running full time," he writes September 1. "Bosc and Anjou are being picket at the same date in some of the lower valley (September 6). Pressures are running about from 14-16 in Bosc and 15-17 in Anjou. A thunder shower, the first rain since April 16 of any consequence, may cause the fruit to become somewhat firmer...."Final payment for the 1937 crop was recently released by the Apple Growers' Association. It was most discouraging to growers to find an average indebtedness of approximately $100.00 per acre returned for last year's crop. While a small profit was realized on certain sizes and varieties of fruits, the gains were all wiped out by prices for the remainder of the crop. As an example, Spitzenberg apples in most cases returned between 3 and 4 cents per box. This figure was for the actual fruit and does not include picking, storage house operations, etc. (There seems to be a similarity between Mr. Harley's reference to the growers' optimism regarding fruit prices for this year, in a recent number of the News Letter, and the old saying about love: 'It's nice while it lasts; but awfully poor stuff to live on.'")

E. S. Degman, Medford, Oreg.

"Bartlett harvest is about completed," he reports September 3d. "What a harvest! After a considerable quantity of fruit had been packed it was discovered that varying percentages (up to 50 percent) of the, apparently, sound fruit had calyx worms. Practically all orchards in the valley had these worms regardless of spray program. Such a condition has occurred in certain California districts in former years but not (admittedly) here. Since the worms were mostly late second brood, they were small and it is hoped that by treating the fruit with methyl bromide gas the actual damage can be held to a minimum."

R. B. Wilcox, Pemberton, N. J.

"There has been no rain during the past week and the weather has been cool," he writes September 10th. "A frost warning on the 8th was followed by a temperature of 32°F. the next morning. There was no warning yesterday but the thermometer on the cranberry bogs dropped to 25° this morning. This is about the border line of safety, but there was probably no damage since most growers used water for protection. About a half dozen cranberry growers have started their harvest, but the picking has been postponed on most bogs until next week since the berries have not been ripening well. The low temperatures of the last two nights will hasten coloring of the fruit, but a cold rain would be very acceptable. Blueberry fields are dry and the bushes are showing some signs of drought on light soil. Powdery mildew is abundant and active, particularly in those fields where the bushes are most vigorous."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J. (continued)

Writing from the Cranberry and Blueberry Disease Laboratory on September 17th, he added: "Most cranberry growers have started picking, but have either interrupted the work or are delaying it as much as possible in order to give the berries a chance to color. The cold nights of a week ago added some color to the fruit but a good rain is badly needed. A few growers are sorting and shipping their fruit nearly as fast as it is being picked."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman

The cultural practice of delaying the turning of the winter cover crop of peas and vetch in the pecan orchard until August-September and mowing the orchard during the summer months instead of planting to a summer crop is proving very satisfactory. Our expense has been much reduced and the trees are apparently suffering less from moisture shortage."

N. H. Loomis

"The last of the bunch grape varieties were harvested the week ending August 27th. These were Catawba, Ellen Scott, Goethe and Marguerite. The crop on all of these varieties was very light."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"Defoliation continues rapidly on the Stuart and Moneymaker trees which have not been sprayed with bordeaux," he writes from the U. S. Pecan Field Station on September 6th. "At present these Stuart trees have only about 5 percent of their foliage and the Moneymaker trees less than 20 percent of theirs, while the bordeaux and the copper sulphate sprayed trees have about 95 percent of their foliage remaining and most of it in a healthy condition. New leaves are being produced on the defoliated Stuart trees. This is a repetition of what is happening to nearly all pecan trees locally, and makes crop prospects for 1939 look poor.

"Much of the defoliation is doubtless due to leaf disease infection, but there are indications that much of it can be corrected with a copper spray when that spray has little or no control of leaf diseases. Stuart and Moneymaker trees on the station which were sprayed with copper sulphate without lime have a heavy infection of leaf diseases, but are holding their foliage as well as are the bordeaux sprayed trees. Mr. J. E. Cupples plowed his orchard in January with a turning plow, and the turning under of the old foliage seems to have given him some control of leaf diseases. Yet, his trees look like our unsprayed Stuart trees."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Excellent control of the twig blight phase of filbert blight was obtained in tests carried on during 1937-38 in a young Barcelona filbert orchard located near Silverton, Oreg., by the application of a sufficient number of properly timed and thoroughly applied bordeaux mixture sprays," he reports for the week ending September 10th.

"The best control was obtained in the plot which received 3 applications of bordeaux mixture 4-4-50 applied (1) in early fall (September 1, 1937) before the occurrence of the first fall rains, (2) in late fall when the trees were about half defoliated, and (3) in early spring when the leaf buds were breaking open. Not a single tree in this plot was severely or even moderately infected, while in the untreated plot 87 percent of the trees were moderately to severely infected, 53 percent severely so.

"The most important single application was apparently the early fall treatment, for where this application was omitted the incidence of infection was decidedly greater, although a late fall and early spring treatment, respectively, did appear to have resulted in a limited reduction in the incidence of twig blight. Thus, only 11 percent of the trees in the plot which received only the early fall treatment were moderately to severely infected, while in the plot which received only the late fall application 64 percent of the trees were moderately to severely infected. In the plot which received only the early spring application, 76 percent of the trees were moderately to severely infected....

"The first measurable rain since the forepart of May occurred in western Oregon during the week, almost an inch falling at Corvallis."

He had written September 3d: "During the latter part of the week final results of studies on the time of filbert blight infection were taken. As stated in a preliminary report made last April, results of these studies seem to indicate that the buds are susceptible to infection practically the whole year round as artificial inoculations made approximately monthly intervals from June 1, 1937 to February 15, 1938 were always positive in at least some instances. However, the most critical part of the infection period is apparently the interval from June 1 to January 1, for inoculations made during this period caused the death of a relatively large percentage of inoculated buds and opening shoots coming therefrom. Inoculations made after January 1, 1938 resulted in comparatively fewer infections and disease development was not anywhere nearly as extensive as where inoculations were made in late summer and fall."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"We have an excellent crop in prospect at Philema this year although the nuts will be somewhat smaller than normal," he writes from the U. S. Pecan Field Station and Laboratory on September 10th. "The infestation of shuckworm in the main station orchard is very light while that in the other blocks at Philema appears to be as heavy as usual. So far the results of our sanitation program are very outstanding."

He had written September 3d: "The trips which were made to various orchards near Albany brought out very strikingly the injurious effects of the early and late drouths which have occurred in this section. The early drouths materially cut down the size of the nuts in most orchards, those suffering the least being the younger well spaced and well cared for orchards. The late drouth is causing severe defoliation in some orchards and on some varieties, Moore and Money-maker being the most seriously affected. Many trees of these varieties have lost at least 50 percent of their leaf area and that remaining has lost much of its efficiency. As a result the nuts on the trees will be poorly filled and most of the trees will probably show a very poor bloom next spring. From present indications nuts on most varieties, except under the best conditions, will all be poorly filled this year. It is my present opinion that the crop estimate for Georgia, as of August 1st, will prove to have been somewhat optimistic.

"One of our experimental plots which was visited showed heavy damage from a wind and rain storm which occurred about ten days ago. The trees are of the Stuart variety under different conditions of spacing and pruning. The plots with trees still standing twenty to the acre were broken rather seriously, while noticeably less breakage occurred in the plots where there are but ten trees per acre. There was relatively little difference in the amount of breakage which occurred between pruned and unpruned trees. One record tree was struck and split by lightning."

LEAD RESIDUE ON FRUIT

Following receipt from the Treasury Department of a statement that investigations by the Public Health Service indicate that the health of consumers will not be endangered by the change, the Secretary of Agriculture has issued notice that the quantity of lead residue permitted on fruits shipped interstate will be raised to 0.025 grain per pound of fruit. The lead tolerance previously enforced under the Food and Drugs Act was 0.018 grain per pound. The tolerances for arsenic and fluorine residue remain unchanged at 0.01 per pound.

--Daily Digest

ADMINISTRATIVE NOTES

Assault-- and Battery ! Several weeks ago, discussing current events, we sent out a notice calling attention to an automatic battery filler available for purchase by operators of official cars. Several orders were sent in to the Business Office but failed to show the make of storage battery to which the filler would be attached. This information is essential, as different makes of batteries have different types of plugs in the cells and the proper type of plug must be furnished with the filler. So--when you send in your order for an Automatic Battery Filler be sure to give us the name of the battery you are using.

Railway Tickets With the opening of the school year, a teacher was telling her young pupils about Alexander the Great and pointing out the pitfalls of ambition, with Alexander weeping because there were no more worlds to conquer. Seeking to find whether the idea had penetrated the minds of her pupils she repeated: "And when he had conquered many lands and finally India, he did not celebrate the victory; instead he wept. Why?" There was quite a silence and then one of the smaller boys raised his hand. "Please ma'am," he suggested, "maybe he didn't know the way home."

Because they do not know the way home, or for some other reason, our workers now and then find themselves with unusused tickets or portions of railway tickets on their hands. What to do? Well, Walter Roney has been discussing this very question with the Bureau's Office of Accounts recently and he says that unused railway tickets or portions of tickets, purchased on transportation requests, should be sent to our Business Office promptly, together with a statement in Triplicate giving transportation request number, date and place of purchase of ticket, and a clear and full description of the actual class of transportation furnished by the carrier. This information is necessary in order to permit the railraods to verify the type of service by checking with the daily records of their conductors. Since different fares apply to coach and Pullman service, the statement should indicate clearly the points between which travel was performed in Pullman cars and the points between which coach service was used, with dates and time of arrival and departure of the trains.

The Bureau's Office of Accounts emphasizes that all this information is needed to secure a prompt and accurate settlement of transportation requests on the basis of the local fares for the different types of service furnished. Where practicable the carbon (memorandum) copy of the transportation request should accompany the explanatory statement. Your cooperation in supplying this information will expedite the handling of your own reimbursement account, as well as the railroad's voucher. Under no circumstances shall an employee attempt to secure a refund from a transportation company for an unused ticket or portion thereof obtained on a Government transportation request.

ADMINISTRATIVE NOTES

Repairs to Vehicles. In a recent ruling of the Acting Comptroller General it is again emphasized that Government-owned passenger-carrying vehicles shall be used only for official purposes and that no expenditures for maintenance and repair of such vehicles in any fiscal year shall exceed one-third the purchase price, with a maximum of $400.00. Purchase price is defined as the selling price of the same type of car by regular dealers of the locality to the general public. The first cost of heaters, defrosters, sun visors (but not skid chains), etc. necessary to the operation of a car is considered a part of the purchase price but thereafter replacement or repair of such equipment is a maintenance cost.

The Acting Comptroller General further directs that detailed record shall be kept of all labor performed by Government employees on such vehicles in the shop of a Federal agency. While this portion of upkeep cost will not appear on vouchers covering repair parts the full details should be available at any time the General Accounting Office may call for them. Such labor costs should be shown under "Miscellaneous" in the block "Upkeep and Repairs" on the monthly statement of operating expenses of Government-owned passenger-carrying vehicles.

All vouchers covering repairs to such vehicles should clearly identify the particular car by license or motor number, and should bear the following certificate, signed by the responsible officer:

CERTIFICATE

> "I CERTIFY that expenses incurred from the beginning of the current fiscal year to the close of the period covered by the attached voucher as submitted, for maintenance, upkeep, and repair of the Government-owned vehicles identified herein, which are used exclusively for official purposes, have been (for any one vehicle herein concerned) not more than one-third of the market price of a new vehicle and in no case in excess of $400.00."

In the event repairs for any one motor vehicle exceeds the statutory limitation a full report of the reason therefor should be made to our Business Office.

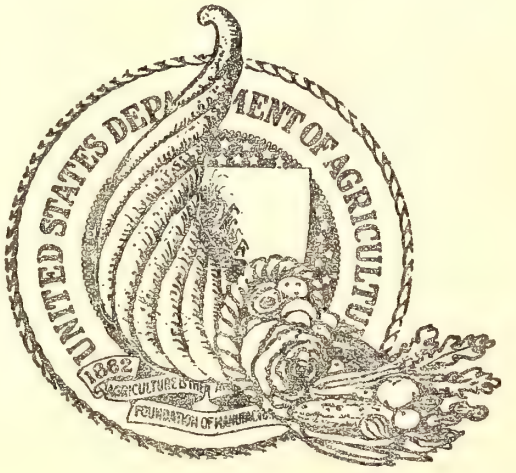
When passenger-carrying vehicles are secured through transfer or otherwise from another Government agency, a report should be obtained of the cost of repairs for the fiscal year up to the date of the transfer.

Vol. 10 No. 19 October 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. X Washington, D. C., October 15, 1938 No. 20

Pecans The sweetest memories of life, our Irish friends tell us, are the recollection of things forgotten! So we feel certain that the pecan growers of Cordele, Ga. and vicinity are just now endeavoring to recall some of the things they have been trying to forget. The pecan industry has suffered from too much initial prosperity. The yield and prices in the early days led growers to expect too much from the trees. It was only natural, of course, for the grower to believe that as his trees grew older and larger the crop would increase and the quality improve, guaranteeing even better returns. It didn't work out that way, and pecan growers ultimately came around to the belief that Job must have grown at least a few pecans, otherwise he would never have known what real trouble was like. And now for the bright side of the picture!

A clipping from the Macon, Ga. Telegraph of September 20, passed along to us by John R. Cole of the U. S. Pecan Laboratory, tells us that there are many former all-cotton farmers in South Georgia who are happy today that they had vision of the possibilities of pecans as a money crop about 25 years ago and set out large acreages in trees. Today, when a short cotton crop is bringing discouraging prices, these pioneer pecan growers are ready to harvest their best nut crop since their groves began to produce on a large scale, bringing them thousands of dollars in ready cash. The season opens about October 1.

"In Crisp county especially are pecan growers optimistic," says this report. "Last year approximately $150,000 worth of nuts were shipped from Cordele. This crop comparing about one-third in size to the cotton crop in this section, is expected to bring $300,000 alone on the local market during the 1938 season.

NUT INVESTIGATIONS

"Last season one local grower who had enough faith in the future of pecans as a staple money crop 25 years ago to put out thousands of young trees, saw his yield increase to 45,000 pounds of choice nuts. This season prospects are for 75,000 pounds of nuts from his grove.

"This farmer a few years ago was in extremely adverse financial circumstances, due to the fact that for years he had planted large acreages in cotton. But he managed to keep his young pecan trees in a high state of cultivation. For several years he has made much headway from a financial standpoint, meeting his obligations and making necessary purchases for improving his modern plantation.

"There are other growers in Crisp county and other sections of South Georgia who a quarter of a century ago prepared to safeguard themselves financially in the passing years with cash from pecans. They are ready for the new season with no fear of mortage foreclosures and other pressing obligations that would discourage and handicap them when preparation for another crop begins.

"Crisp county pecan growers take especial interest in every phase of cultivation that would assure larger and better yields. They are convinced where groves are sprayed systematically many of the discouraging factors in producing are entirely eliminated. Last winter several local growers gave their trees thorough spraying with the latest improved machinery. A checkup now reveals there is the greatest difference in yields where trees were sprayed. In the future spraying on a large scale will be one of their main activities....."

Commenting on the clipping, Mr. Cole writes: "A newspaper clipping concerning the pecan industry in the vicinity of Cordele, Ga. (about 25 miles east of Albany) is enclosed. This clipping gives some important information on the scab spray work, although the time of applications is somewhat confused. All of the sprays were made during the spring and summer, according to our schedule...

"Since pecans are now ripening we are kept busy patrolling our plots to prevent birds and squirrels from destroying the nuts and upsetting our data," he adds, writing under date of September 24th. "The nuts are ripening about two weeks in advance of last season."

The newspaper item, incidentally, states that Georgia alone shipped in 1937 a million pounds of paper shell pecans to foreign countries, prices ranging from about 13 to 23 cents per pound. It estimates that last year some 63,000,000 pounds of pecans were sold over the entire production belt.

NUT INVESTIGATIONS

A. H. Finch, Tucson, Ariz.

"Pecan filling is progressing satisfactorily in Arizona at the present time," he writes September 21. "Each year's experience finds us with a little better understanding of irrigation and other practices which give the best results. More of the growers each year have adopted the suggestions of orchard management that have developed from our studies on the physiology of filling. This year practically all growers have followed definite moisture control practices. The quality of filling and maturity generally has improved each year and present indications are that it will be quite satisfactory this season. This is a far cry from the serious losses which occurred in 1933 and 1934 when the success of pecan growing in Arizona was in doubt because of poor filling and maturity.

"This year in the Yuma valley the last irrigation was given in several orchards the early part of July. This coincides with the time when the most rapid growth of nut is initiated and has seemed to provide for satisfactory size of nuts and sufficient moisture to carry the trees through harvest. This schedule seems to be a very practical one in this valley where a high water table provides some moisture to the trees. In districts where underground water is not available light furrow irrigations during the summer seem to be a practical method.

"As previously reported, blossoming was considerably delayed this year because of the warm winter which preceded. This raised some question as to whether pollination and normal development of nuts and kernel would occur this year. Present evidence indicates that no harm was done to nuts or trees. It cannot be determined yet if the nuts will be delayed in reaching maturity.

"The work on Texas root rot, Phymatotrichum omnivorum, being conducted cooperatively by Dr. Streets of the Arizona station and Mr. Brinkerhoff, is giving decidedly encouraging results. Soil applications and injections with various chemicals as ammonium sulfate, ammonium phosphate, sulfur, and sulfuric acid have seemed to slow down the activity of the disease to where fewer trees are lost.

"These treatments when followed by cultural practices which eliminate crops and other vegetation which are susceptible to the root rot organism and upon which it can grow and perpetuate itself seem to offer promise of a practical control for root rot in pecan orchards. A series of 38 soil tanks consisting of 50 gallon steel drums containing 600 pounds of soil each was installed at the University Farm. Four series of 9 tanks each containing soils from 4 orchards under experimental study were given the treatment used in the field for closer study of the duration of the treatment and rapidity of leaching."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Splitting of the shucks on most varieties of nuts is occurring very extensively," he reports September 24th. "However, it is hardly likely that much harvesting will be done until the latter part of October, but it is probable that most varieties will be ready at that time. The Stuart variety is usually one of the latest to ripen but is as far advanced as the Schley at this time."

He had written September 17th: "Field work included the harvesting of chestnuts and the taking of notes on the sprouting of pecan stumps trated with different chemicals, as well as making general observations of crop conditions. The chestnut harvest is completed for the year, a total of about 480 pounds of chestnuts having been harvested. In the stump killing experiment, sodium arsenite was the only material which showed any killing. This material either prevented all sprouting or so affected the stumps that the sprouts were very weak....

"A major portion of the week was spent in travel, observing many pecan orchards in Mississippi and Alabama-- and it was concluded that pecan growing in Georgia is not quite as discouraging as has been thought at times! ....One of the outstanding observations made was that the best orchards in all instances were those in which an intercrop had been grown. In other instances even one cultivation of the tree rows caused a striking improvement in the condition of the trees.

"Throughout Mississippi and southern Alabama the Stuart variety appeared to be doing the best. Success along the Gulf coast was also fairly good. Opinions of various growers varied in regard to the Lewis variety and others. Trees of the Lewis which were seen generally looked good. Some seedlings of promise were seen and arrangements were made for obtaining budwood next year for test in this section. Some of the best of these were found at Pascagoula, Miss., where many of the more commonly planted varieties originated.

"Topworking of seedling pecan trees was observed in western Mississippi near Vicksburg and the method of bark grafting used had given good results. Farther south at Lumberton, the same method had not been so successful and strengthens the idea that climatic conditions may affect the results, as we have had relatively poor results here at Albany, too. It is thought that climatic conditions may alter the nutritional condition of the scion wood sufficiently to cause poor growth where winter and spring temperatures are high.

"Trees and nut crops were found to be fairly good to good in central and eastern Alabama and generally throughout Georgia."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

Writing from the U. S. Pecan Field Station on September 17th, he made the following comment, interesting in connection with Mr. Hardy's report on a preceding page of experiments in stump killing: "During the week a check has been made of the number of stumps in the pruning block which are sprouting, in order to determine the effectiveness of burning in controlling sprouting. Data showed 9 percent of the burned stumps and 97 percent of the unburned stumps sprouting. Also there are fewer and weaker sprouts on the sprouting burned stumps than on the unburned stumps."

He has written September 26th: "Defoliation continues but less rapidly than in the past. Stuart and Moneymaker trees not sprayed with bordeaux are nearly entirely defoliated and are making second growth. Some have the appearance of spring. It is easy to forsee the effect of this on next year's crop from these trees.

"Bordeaux sprayed Stuart trees in the cultivated plots in the Cultural Experiment have lost about 20 percent of their foliage, while Stuart trees in the same plot sprayed with copper sulphate have lost less foliage than have those sprayed with bordeaux."

Milo N. Wood, Sacramento, Calif.

"The almonds are now ripening very fast in the breeding tract as well as in commercial orchards," he writes September 24th.

"The harvest is considerably later than the average and much later than last year. The crop is very good in the breeding tract and it is about all that we can do at the present time to keep up with them. The exceedingly hot weather we have had during September has hastened the ripening somewhat."

He wrote August 27th: "Work on the almond breeding project has been continued. A careful examination has been made of Field 6 to see how many of the 2,800 trees are ripening their almonds at this time. It is clearly the latest season we have ever had for harvesting almond varieties....

"Some data were obtained in different places regarding the Jordanolo and Harpareil hybrid almonds. In most cases the trees appeared to be in good condition and have made a thrifty growth under all conditions in comparison with the common commercial varieties. The Jordanalo seems to be holding up well against the red spider and seems to be far more resistant than any of the commercial varieties, and more resistant than the Harpareil."

DECIDUOUS FRUIT INVESTIGATIONS

Lee W. Hutchins, enroute. Fruit-tree Virus Diseases

"The past week has been devoted to work on the Muir peach disease, at Chico," He writes October 2. "Maps of the Rath and Brown orchards of the Muir variety were made, in which tree-by-tree records are kept to note natural spread of the disease, behavior of old or new cases, first appearance of symptoms on termination of the incubation period, effect of pruning, and other miscellaneous observations. Severe dehorning of trees representing old cases of the disease failed to stimulate extended new limb growth; profuse lateral branching with short internodes resulted and such trees are extremely dwarfed, with rich deep-green, large, flat leaves showing no yellowish discolorations or mosaic patterns. In this respect, the Muir disease bears a strong resemblance to phony disease in the Southeast, although detailed studies on symptomatology, varietal response in peach and in other species of Prunus grafted on Muir-disease-affected trees, together with the results of certain transmission tests, shortness of incubation period, and failure to give a positive phony-disease laboratory test, definitely establish the fact that Muir disease is distinct from phony disease and can not be regarded as a manifestation of the latter disorder in an environment markedly different from that of Georgia and other southeastern States."

Writing from Hood River, Oreg. on September 18th he said: "Inspections of orchards for peach mosaic and other fruit tree virus diseases were made enroute, particularly in the Santa Clara Valley and at Santa Rosa, Calif. At the latter point an interesting hour was spent in the Luther Burbank Garden, situated in the town of Santa Rosa, on U. S. Highway No. 101. Mrs. Burbank still occupies the residence, but the Garden has been taken over by the Junior College of Santa Rosa.

"Some of Burbank's most famous hybrids and introduced plants are being cared for. Annuals are maintained, propagated from seed. Woody plants are propagated by budding or grafting from the originals as the latter show sings of deterioration or death. Original plants of the spineless cactus, hybrid walnut, and hybrid mulberry are very vigorous and in excellent condition. The Garden contains several Prunus hybrids and introduced species. Packets of seeds, photographs, and sourvenirs in the nature of paper knives and weights made from prunings of some of the hybrids, and fruits in season, are offered for sale."

C. O. Hesse, Davis, Calif.

"During the past week one pear seedling from the seedling block at Davis was selected as having considerable promise," he writes September 24. "The fruit is most nearly comparable to Winter Nelis, which it somewhat resembles in shape, size and quality. It is of the best in dessert quality, and is completely covered with a rich, golden brown russet. It seems to develop best quality when picked a week to 10 days after Bartlett. The parentage is uncertain, except that Bartlett is one parent."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"The accuracy of some of my prognostications is quite amazing," he writes in his report of September 26th.

"In an earlier report I prophesied that this would be a good season for apple coloring. This expression must have been overheard, for shortly afterward someone turned on the heat and we have been experiencing one of the hottest Septembers that has been recorded. Along with high daily temperatures the nights also remained warm. Consequently, this together with some other factors such as forest fire smoke, has resulted in very poor coloring weather indeed. Some of the fruit is badly sunburned, "buckskinned" and watercored. Some varieties such as Jonathan and Delicious appear to be maturing rapidly but without the desired coloring. This is not by any means as long a growing season as was experienced in 1934 but it shows some of the characteristics of that year in so far as fruit conditions are concerned.

"The total tonnage of apples from the Wenatchee district will not be as large as the early estimates. This is primarily due to increase in cullage percentage as the result of rather severe late codling moth infestation."

John H. Weinberger, Fort Valley, Ga.

"The final figures on the 1938 Georgia peach movement, released by the Bureau of Agricultural Economics, show that 7,322 cars were shipped from Georgia this year by rail," he reports September 26th. "The equivalent of 750 cars moved by truck were inspected also. The latter accounts for only a portion of the truck movement, however. The total is roughly equal to the 10-year average.

"Peach County, despite its small size, lived up to its name and shipped more peaches than any other county in the State. Fort Valley with 1,019 cars had almost double the number of cars of any other shipping point. The data verifies the impressions received in traveling about the State, that this section is coming back strongly in peach production.

"One of the interesting features of the season, as brought out in the report, was the overlapping of the Early Hiley movement from South Georgia and the Early Rose movement from Central and North Georgia. Since Early Hiley is a relatively new variety just coming into commercial production, this conflict will tend to become more serious in future years. The advantage is all with the Early Hiley, since it is a freestone of superior quality, and the probable result will be the disappearance of many Early Rose orchards from late-ripening sections."

VEGETABLE BREEDING AT CHARLESTON

What use is pure science? Didn't practical men get along all right without technical training in plant breeding? Dr. Charles F. Poole touched on these questions in a talk early in August, before the South Carolina Economic Society of Charleston, S. C., on the plant breeding work at the Regional Vegetable Breeding Laboratory.

In the beginning, he conceded, we had to go along with the trial and error method because there was little fundamental information available for the guidance of the plant breeder. Remarkable discoveries were sometimes made, too. Eventually, however, we realized that this guess and test method was slowing up progress and that fundamental data, obtained by men with technical training, was essential to speed up the work. Now, of course, leading industrial concerns as well as scientific organizations know that they can not operate at full efficiency without the aid of technically trained workers who conduct fundamental research.

The Regional Vegetable Breeding Laboratory at Charleston, S. C. is the only institution in the world dealing exclusively with fundamental problems connected with the breeding of vegetables. The Southeast has long been a large producer of vegetables and the increase of late years has been nothing less than amazing. The acreage devoted to truck vegetable cultivation in Texas, Louisiana and North Carolina has increased 600 percent since 1919; that of South Carolina and Oklahoma, 500 percent; and that of Alabama, Mississippi, Florida and Georgia from 300 to 400 percent. All is not well with this huge industry, however. Many varieties now grown are poorly adapted to the Southeast, and the shipping and general qualities of some of the others are far from ideal. The responsibility for placing at the disposal of the grower the best varieties, and of making certain that he uses the best methods of growing and handling, rests with the research specialist. The time has passed for dependence on haphazard methods for procuring new varieties through chance discoveries. Now we deliberately synthesize new varieties to meet particular needs. Some of the problems are local in their nature and can be handled to advantage by the State station workers; others are of wide general importance, emphasizing the need for such a station as that at Charleston, to do foundation work.

At present we are concentrating our principal efforts on five vegetables: beans, cabbage, tomatoes, sweet corn and watermelons. Foundation material of all of these has been obtained from various parts of the world as well as from all available sources in this country, and assembled at Charleston where with the help of the latest technological aids we are sorting out the hereditary factors responsible for superior characters preparatory to combining them in new and superior varieties especially suited to the needs of the Southeast.

We have found snap beans resistant to certain forms of rust when grown in other parts of the country are not resistant to all forms of rust in the Charleston area, whereas snap beans resistant to local forms of rust lack other desirable qualities. We are going ahead to combine the desirable characters of both sorts in an improved snap bean.

The present dominant commercial variety of cabbage grown in South Carolina is fairly cold-hardy, of fair quality, liable to bolt under adverse conditions, has not the most desirable head shape for shipping, and is not as true-breeding in its varietal characteristics as we should like. We are inbreeding and selecting among all obtainable types and forms of cabbage in an effort to separate out desirable characters than can be recombined.

In sweet corn we are developing lines or varieties highly resistant to the earworm and which retain the high quality of the sweet corn sorts in demand for market and for home gardens.

We find many difficulties to overcome in securing our ideal tomato for the Southeast. We are now selecting the best of our strains for later hybridization, selection and rigid testing to develop varieties able to resist cracking and disease attacks. We need tomatoes with heavy foliage to protect the fruit from the sun, and plants that bear fruits well up from the ground as protection in wet summer rainy seasons. And, of course, we need varieties that will ship well.

With the watermelon we are looking toward the production of new sorts considerably sweeter, and with superior flavor and flesh texture. There are interesting possibilities, too, in watermelons with new and pleasing color combination in skin and flesh. We need, too, watermelons of a size and shape better suited to the modern home refrigerator! At the same time, of course, we are bearing in mind the importance of resistance to such widespread diseases as wilt and anthracnose, and the obtaining of melons that will not bruise or crack in shipping, and which will keep longer than the sorts now commonly grown, thus lengthening the season of shipping and use.

In connection with these efforts we must consider the wide variety of climate and soils in the Southeastern United States, which taken in connection with the number of new varieties we are obtaining, means that if most of the resulting new lines fail to attract general attention or prove widely adapted, at least a few of them are practically certain to meet local needs here and there. A new variety good in one locality may be unsatisfactory in another, but with large scale production of new sorts the chance for success is infinitely greater.

We intend to uncover the fundamental facts necessary as a basis for successful vegetable breeding and make them available for the use of our cooperators and all others interested.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

Edwin Smith, Wenatchee, Wash.

"The first picking of Delicious, Richared, and Starking apples in our harvesting maturity studies was made in this district on September 9th (135 days from full bloom). The apples were still immature but commercial harvesting started in this orchard on September 12th as the District Horticultural Office decided to certify packed Delicious as "mature" on September 14 (140 days from full bloom).

"Even the Starking were not well colored on this date as prevailing temperatures had been high, whereas Delicious had only a few pale stripes. As the very first cars which were shipped from the Earl Cowin orchard, Wapato, on September 9th brought the grower $1.75 per box and the earliest cars from Wenatchee sold for $1.50, quite a few cars of Starking were picked and shipped last week. Then Delicious harvesting operations stopped.

"Judging from the lots picked September 14 (142 days from full bloom), both Delicious and the red strains should be satisfactorily mature any time this week. However, the days keep hot and the night temperatures have remained high for this time of year, barely going below 50°F. just before sunrise, so that any color development has been 'feeble' and some of the color secured during the first three weeks in August seems to have faded. Had color development been normal, Delicious harvesting would have been in full swing this week, whereas it is at a standstill. By next week Delicious will be so mature that harvesting will have to start. If this weather continues they will pack out heavy in the Fancy grade.

"Jonathan packing has been dragging due to poor color and low prices. The third-brood codling moth injury has been so severe that the wastage is terrific. Many Jonathan crops will not be harvested for this reason. Even Jonathan crops like the one in the Van Valkenburg orchard which was quite clean in August now has heavy worm damage. A car of Jonathans from the Ribbon Cliff orchard was held up at Wenatchee because the official sample showed fluorine residue above the tolerance and was rewashed at the American Fruit Growers' plant. In rewashing, they sorted out 20 percent on account of codling moth injury which was not detected at the time when the apples were originally packed.....

"Never before has there been so much fruit wastage in this district. Some apricot orchards, especially on Wenatchee Heights, were left unpicked. With Bartlett pears at $8.00 per ton for No. 1 grade and $4.00 per ton for No. 2 grade, many growers left their orchards untouched. The fruit is now rotting on the ground and when driving past these orchards the odor of fermenting fruit is quite as pronounced as was the fragrance from the blossoms in early May."

TRAINING CLASS FOR FRUIT AND VEGETABLE INSPECTORS

"A training class for fruit and vegetable inspectors of the Bureau or Agricultural Economics was conducted in New York City during the entire month of September," writes C. O. Bratley of the section of handling, transportation and storage and market disease investigations." A total of 13 men from several of the eastern States, including 3 from Florida, were brought together for it, the first training class since 1935. Instruction on the identification of market diseases of fruits and vegetables was given by Dr. Ramsey, who came east from Chicago, Dr. Wiant and myself. An attempt was made to use actual disease specimens in the instruction work so that much of our time was spent in obtaining diseased materials from the various City markets handling low quality produce. The final examination for the course consisted of the identification of diseases on 30 different specimens."

ADMINISTRATIVE NOTES

Pay for Holidays

The clergyman, wishing to get an idea of the way his sermon had appealed to the congregation, called in the janitor and asked him how he liked it. "I think it was a grand sermon, your riverence," said the man. "What did you like best about it?" the clergyman wanted to know. "Well, now that you be askin' me, I'll tell ye: What took holt of me most was yer riverence's parsevarance--the way ye wint over the same thing again and again and agin."

Since it is usually a good bit better to be safe than sorry, we are more than willing to go over things again and again, to be sure that you know where you stand. For example, we have been receiving a number of inquiries as to whether or not employees working under letters of authorization and who have worked continuously for a month or more should be paid for a holiday occurring within the period of their service but on which day they did not work.

Personnel Circular No. 66, dated July 27, 1938, called attention to Public Resolution No. 127, approved June 29, 1938, which directs that whenever regular employees of the Federal Government whose compensation is fixed at a rate per day, per hour or on a piece basis are relieved or prevented from working solely because of a holiday or any other day on which the departments and establishments of the Government are closed by Executive Orders, they shall receive the same pay for such days as for other days on which an ordinary day's work is performed.

It is the opinion of Department officials, however, that employment under letters of authorization must be regarded as temporary and intermittent rather than regular, such employees being paid on a basis of wages actually earned. Therefore they cannot be paid legally for a holiday on which they render no service.

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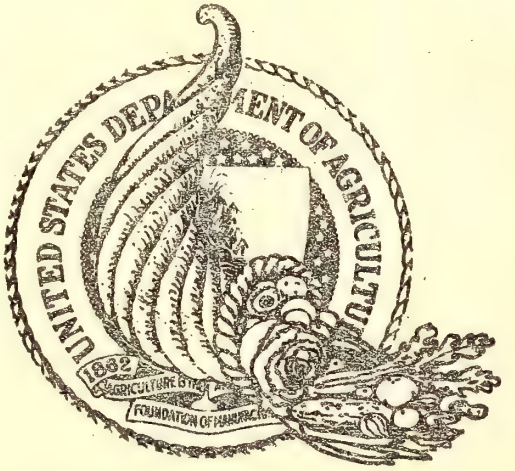
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY NEWS LETTER.

The Official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., November 1, 1938 No. 21

Potatoes We are still hearing enthusiastic comments on the very successful meeting of potato workers late in August at Presque Isle and Fredericton. If further evidence were needed that potato breeding problems and objectives cut across State lines and international borders and involve large regions of the entire country, it will be found in the success of this conference of scientists cooperating in the national breeding work. There were 71 in attendance at Presque Isle, Me. August 22 to 24, and 57 at the August 25 meeting at the Dominion Experiment Farm, Fredericton, New Brunswick. These workers represented no fewer than 17 States, 5 provinces of Canada and Cuba!

Since the program was inaugurated a few years ago cooperatively between the State experiment stations and the United States Department of Agriculture, these summer conferences have been considered a part of the potato breeding work. Results to date indicate that they have become one of the most important parts of the program. The August meeting was a step in advance as it represented a joint meeting of Canadian and United States workers interested in potato improvement and pathological problems.

Dr. F. A. Krantz, who is in charge of vegetable investigations at the University of Minnesota, and who has had a wide experience in potato breeding, led the discussion on breeding methods. Dr. E. S. Schultz of our Division led the discussion on virus diseases and demonstrated in the greenhouse and with cages in the field the technique and extent of work necessary to identify the various virus diseases, separate them one from another, and keep them separate; and our colleague Dr. Charles F. Clark described the work on breeding for scab resistance. Superintendent C. F. Bailey of the Dominion Experiment Station demonstrated that excellent work in potato breeding and pathology is being done by our neighbors across the Canadian border.

Speaking of cooperation, the interdependence of the plant breeder and pathologist is certainly illustrated strikingly by the work in breeding for resistance to virus diseases. Little knowledge, if any, would be had concerning the inheritance of resistance to these diseases if it had not been for the preliminary studies of such workers as Dr. Schultz of our Division, Dr. Donald Folsom, head of the department of plant pathology of the Maine Agricultural Experiment Station, and others in classifying the viruses and bringing order out of chaos, and less would be known about the behavior of the viruses if it were not for the new productions of the plant breeders.

The work on breeding for scab resistance was described by Dr. Charles F. Clark of our Division. Demonstration material from the scab tests indicated a high degree of resistance in some of the seedling lines. The most promising seedling varieties from the commercial standpoint inherited their resistance to scab from Richter's Jubel or Hindenburg, although some degree of resistance is to be found in Golden, Russet Burbank, Russet Rural and in selfed lines of Katahdin.

Scab resistant varieties would have an advantage not only on land where scab is now the limiting factor in growing a profitable crop of potatoes, but also in sections where scab can be held under control by soil management. It is quite possible that soil management to control scab is not the most efficient in raising potatoes. If commercial varieties were available highly resistant to scab it would be possible in some sections, that is, to lime the soil, produce better legume crops and as a result higher yields of prime potatoes.

The late blight resistance plots also aroused much interest. These plots at Presque Isle were sprayed with blight spores instead of bordeaux mixture during the growing season. Blight started early and continued to fruit late so that all susceptible lines were killed about the middle of August. A 7-acre field of Sebago, our new blight resistant variety, attracted decided attention. This field was not sprayed for blight control yet showed little injury from the disease in contrast to many farmers' fields of Green Mountain that had been sprayed regularly and were dead or nearly dead in spite of attempts to control the disease. Reiner Bonde, associate pathologist of the Maine Station, says that in years of studying late blight resistance in tubers he has yet to find tubers of Sebago rotting in the ground because of late blight. This is in decided contrast to Green Mountain potatoes in which he has sometimes found more than 50 percent of the tubers developing rots at digging time. Too, he has found the Sebago somewhat more resistant to scab than the Green Mountain.

If the Sebago can be grown and marketed to advantage, it will save the farmers much expense and drudgery in the production of the potato crop--and, incidentally, give us another million-dollar-a-year dividend producer!

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"I have found during the past week that there are still a good many cranberry growers who have not completed their harvest," he writes October 15th. "It now appears that picking will continue until close to the end of the month. It is now estimated that the total crop at Whites-bog will be at least 20 percent under their original estimate, and some other growers on certain bogs have run as low as 50 percent. Final figures will not be in for some time."

Heavy rains the latter part of September caused Rancocas Creek to rise to record levels. The lake at Browns Mills overflowed the road and washed out the lower face of the dam about one-third of the way across the road through the dam still held. Many bridges were washed out or undermined. He reported October 1, however, that most of the streams had returned to their banks and work was under way repairing dams, bridges and roads. All streets in Mount Holly were reopened by September 26th, and most highways were passable. "Cranberry picking was resumed on practically all properties. It does not seem likely that this final flooding of cranberries (the fourth for the season on numerous bogs(will do any great amount of damage, although it is possible that the keeping quality of some of the ripe fruit will be affected unfavorably."

H. F. Bergman, East Wareham, Mass.

Writing on October 4th he says: "Cranberries from experimental plots on a bog near Assonet were screened this week. The berries from this bog always rot badly. These berries had been picked a week before they were screened. The amount of rot in the check plots varied from 26 to 34 percent. On many other parts of the bog we estimated that 30 to 50 percent of the berries were rotten when picked. As this bog has an area of about 17 acres and would have a crop this year of about 60 barrels per acre it is evident that so much spoilage means a heavy loss to the grower. On our plots three plots each sprayed with three different kinds of spray respectively had only 10 to 12 percent of rot. The sprays used were red copper oxide with bentonite, bordeaux 5-2-50 and copper hydro 40. The last is a commercial preparation. Last year's trial of this material was not entirely conclusive but the results this year compare very favorably with those of bordeaux.

"As harvesting proceeds the growers are finding that the yield continues to fall below the estimate. The Howes are falling short even more than the Early Blacks did. It seems somewhat doubtful now if the crop in Massachusetts will make as much as 300,000 barrels instead of the 365,000 estimated before picking began. The opening price on Early Blacks was set at $8.60 a barrel but has lately advanced a little." An incubator test indicates that the keeping quality of the berries will be poor this year.

DECIDUOUS FRUIT INVESTIGATIONS

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on September 24th he says: "During the past week I visited several blueberry fields in an effort to check up on the prevalence and varietal susceptibility of the different varieties to mildew and leaf spot. At the farm of F. Coville, Takinson, N. C., Pioneer was worst affected by mildew, followed by Cabot, Concord, Scammell and June. June was practically free of mildew, there being only a trace on the upper surface of a few of the leaves. On the farm of Mr. Huntington, Pioneer was also the variety worst affected, followed by Rubel, Cabot, Rancocas and Concord. On the farm of Mr. Crabbe at Magnolia, Pioneer was the worst, followed by Cabot, Jersey, Rubel, Scammell, Rancocas, Stanley, Concord, and June. The variety Concord was not altogether free of mildew, but it is apparent that it was not injured very much. On the farm of F. Coville the unsprayed Concord plants looked better than the sprayed Pioneer plants.

"Mr. Coville made one application of 4-4-50 bordeaux plus one pound fish oil soap about the middle of July. The difference between the sprayed and unsprayed Pioneer plants was very striking. On the unsprayed plants the leaves were heavily coated with mildew and the fungus was producing the perfect stage on both the upper and lower leaf surfaces. On the sprayed plants there was evident a greyish cast, but apparently the spray had rendered the fungus inactive and had stopped its further development. The variety June was practically free of mildew; all I saw was a mere trace on the upper surface of a few leaves. In July, when Mr. Coville did his spraying, there was so little mildew present on June that he decided not to spray it at all....

"There was wide variation in the reaction of the different varieties to leaf spot. On the farm of Mr. Huntington the leaf spot was worst on Rubel, followed by Rancocas, Concord, Pioneer and Cabot in the order named. At Mr. Crabbe's I believe that Rancocas and Concord, probably, were the worst for leaf spot followed by Cabot, Stanley, Rubel, Pioneer, Scammel, June and Jersey in the order named.

John H. Weinberger, Fort Valley, Ga.

"We have had several mornings this past week when the temperature dropped below 45°F., giving us 11 hours of temperature below 45°--a modest beginning for the season, with more to follow!" he writes October 10th. "Two Early Rose trees growing in buckets were placed in the control chamber, where temperatures are not allowed to fall below 45°; two were placed outdoors in shade, and two in sunlight. This will provide an opportunity for determining whether 45° is as effective as lower temperatures in breaking the rest period."

DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Fruit tree virus diseases.

Writing from Chico, Calif. on October 8th he says: "Prune dieback is extremely severe this year in the vicinity of Chico. Whole orchards appear to be almost dead, with the trees giving the appearance of a fire having swept through the plantings. At first, I thought it was a question of the growers becoming discouraged with the price of dried prunes and withholding irrigation water in the orchards, perhaps intending to abandon them, but this was not the case. The orchards were well watered. In riding through the orchard district near Chico, one is impressed with the extensive almond culture and the number of young orchards."

He had written September 27th of a trip to the Hood River, Oreg. country, inspecting cherry orchards with Mr. Reeves and Mr. Kienholz, especially trees showing symptoms suggestive of virus diseases. "On September 21st Harley, Reeves and I called at the Wenatchee branch of the Washington Experiment Station, talked with Mr. F. L. Overley and others, and saw a demonstration of the new spraying equipment whereby concentrated chemicals are injected into the pipe line under controlled conditions regulating dilution of the spray mixture or solution as it reaches the nozzles. Later, Mr. Harley showed us his simple but ingenious technique for girdling, which he calls 'string ring." I can't wait to try it out on some of the virus diseases!"

E. S. Degman, Medford, Oreg.

Writing from the Pear Field Station on October 6th he says: Winter Nelis harvest is now under way and probably will be completed by Oct. 15. "Since the last report, John Grim and I have been making nitrate determinations on the soil samples collected during the past season. We know now that we have had some trees growing in Meyer Clay Adobe soil containing from 20-100 ppm of nitrate for a good portion of the growing season. Computed on the basis of soil solution, the nitrate content is pretty high, but, during this season, no external evidence of this nitrate has been evident. Samples of the tree tissue have been taken but not yet analyzed to see if there has been any appreciable uptake of nitrogen.

"Only a small number of leaves has fallen to date. The trees in the alfalfa plots show a yellowing of the foliage since harvest as compared to the cultivated plots. This is the first time this season that color differences have been noticed in these four plots. A light frost occurred this morning and the leaves will probably fall in the near future.

"Final counts show that we caught 1,789 codling moth in our two traps, on an average of 894 per trap for the season. The first moth was caught April 30 and the last one on September 2. The peak days catch on May 22 was 220 (110 per trap) and 190 were caught the next day."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"Filbert harvest is practically over with," he writes October 1. "The crop is short as compared to the estimates, which will probably place it about on the level with or a little shorter than last year's crop. The sale has been unusually good, with an increase of a cent a pound over the prices of last year. The biggest association sold out over 10 days ago, even before any nuts have been shipped. The independent buyers have been scrambling for nuts to fill their orders.

"Walnut harvest has not started, although it will be on very soon now as heavy rains occurred the last of the week, and the nuts are cracking and dropping fast now.

"All through the season the walnut trees have looked exceptionally healthy and vigorous until approximately a month ago when yellowing began to be noticed. At this time many orchards have a great portion of the leaves on the ground so that the crop will be harvested from among the leaves. This shedding has occurred not only on unirrigated but also on irrigated orchards. The few orchards that are irrigated do not present any better appearance than do non-irrigated orchards. What effect this will have on the crop we do not know."

Max B. Hardy, Albany, Ga.

"The shuckworm counts at Philema showed some very interesting results," he reports October 8th. "In the portions of the orchard where sanitation was practiced the average number of shuckworms per nut was just about one-half that of any other section of the orchard even though in previous years these other sections had shown a somewhat lesser infestation. Spraying during the late summer with nicotine-oil sprays slightly reduced the infestation as compared with sanitation alone. In the old seedling orchard where shuckworm has been very serious each year a larger number of parasite pupa cases was found in the shucks than in any other section. The Stuart shucks had a higher infestation than the Schley, due probably, to the facts that infested Schley nuts drop more readily than infested Stuart nuts and that the Stuart shells hardened sooner than the Schley."

John R. Cole, Albany, Ga.

"A number of visitors have inspected our plots, several coming from distances as far as 100 miles," he writes October 8th. "They are favorably impressed by our results and at least two, after studying our results, have signified their intention of purchasing spray machines for next year."

NUT INVESTIGATIONS

F. N. Dodge, Shreveport, La.

"Six hundred and fifty pounds of Moore and Schley nuts were harvested this week," he writes from the U. S. Pecan Field Station on October 10th. "Moore quality is very poor, with the shucks sticking badly. Part of this apparently is due to shuckworm, but much of it can not be attributed to that cause. A similar condition is becoming evident on the Success variety, and this condition seems to be associated with the early defoliation; since most of it is on shoots which have lost nearly all their foliage, and shoots with considerable foliage seem to have fewer nuts with dry shucks than do the defoliated ones.

"The shucks are not sticking badly on the Schley trees, but they are not opening as they should. Much shell splitting is present with the Schley nuts. This is not due to sprouting, but to too high a degree of filling.

Paul W. Miller, Corvallis, Oreg.

"The filbert harvest is now practically over," he writes October 8th. "In spite of the fact that the 1938 crop was one of the largest on record, it has been completely sold. In general, the quality of the crop was not up to par, there being a relatively high percentage of 'blanks' in the crop. Walnut harvest is now in progress in seedling orchards and will get under way in Franquette plantings this coming week. The prospects are for a bumper crop."

TUNG OIL INVESTIGATIONS

George F. Potter, Bagalusa, La. (U.S. Field Lab. for Tung Investigations)

"Our selection is based primarily on oil production per acre over a term of years," he writes October 8th discussing selection of superior tung trees to be tested as parents of new strains or varieties. "Heavy bearing is sought, but not to an extent that precludes terminal growth and production of flower buds for the succeeding season. A strong type of tree is desired, a fruit that is not too small and one in which the proportion of meat to husk is high. Early maturity of the fruit is very desirable, enabling the grower to pick up the nuts before leaf fall, and giving the tree a chance to build up its reserve before winter. No tree has yet been found that meets all these requirements, but during the week 25 seedlings were described and tagged for further tests."

He had written October 1: "The weather has been dry and the crop is maturing early. Trees on poor soil and especially if closely planted, do not have well filled nuts and it seems likely that the oil content will be low. One is forced to the conclusion that close planting is a very serious mistake."

NUT INVESTIGATIONS

Apropos tung investigations, Dr. H. L. Crane is back in Washington (or rather at Beltsville, Md.) after a rather extnesive trip through the South in connection with the initiation of work under this new project of the Division--Tung Oil Culture and Breeding Investigations. Tung oil, of course, is quite important in the paint industry, but at present is largely imported from China.

Dr. George F. Potter, located at Bogalusa, La., will be in charge of the tung investigations, assisted by Dr. Ernest Angelo and Dr. Louis P. McCann, also stationed at Bogalusa; together with Dr. Felix S. LaGasse who has headquarters at Gainesville, Fla., and Mr. John H. Painter, who is located at Cairo, Ga. These workers are all new members of the staff of the Division.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

James S. Wiant, New York, N. Y.

"For the first time since 1931, when special attention was first given to the market diseases of muskmelons, anthracnose was found on western melons," he writes from the market pathology laboratory. "Occasional cars of Colorado Honey Dews showed a small percentage while in one carlot over 30 percent of the melons were spotted.

"Phytophthora rot which in previous years has for the most part been found in only occasional cars of Colorado and California Honey Dew melons was during the present season of unusual frequency and importance in Colorado stock. The decay was found for the first time in cantaloups. From one-fifth to two-fifths of the melons in many crates of a carlot from Colorado were found affected.

"Only four cars of Winter Queen melons were received from Colorado this season. All were in excellent condition upon arrival.

"Bacterial canker was found in the form of occasional spots on 15 percent of the fruit in one part of a car of New York tomatoes recently. In one lug 50 percent of the tomatoes were affected. We have not previously seen this disease on the New York market.

"Brown blight was found during September in four different cars of lettuce from Salinas, Calif. In each carlot only occasional heads were affected. The disease has very seldom been met with on the market during recent years."

Mr. D. F. Fisher is on a trip to the Northwest, where he will consult with members of his group regarding fruit and vegetable handling, transportation and storage activities in that region.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Delicious harvesting operations have been in full swing about a week and opportunity is now afforded to observe the effect of the higher lead tolerance (.025 grain per pound) on cleaning operations," he writes October 4th. "In the Wenatchee district the commercial packers have been washing with lower solution temperatures than in previous years, excepting with certain crops where several fluorine cover sprays were applied on the fruit.

Thus far there has been an unusually small amount of injury in the form of heat cracks. Small amounts of injury associated with fluorine residues and hydrochloric acid washing solutions have been reported.

"With a lead tolerance of .018 grain per pound most commercial packers became worried when official samples showed from .013 to .014 grain and most packing house foremen felt safer when they were cleaning below .01 grain per pound. In the event their samples were going higher than these figures they would 'step up' their sodium silicate solution temperature to 110°F. and their hydrochloric acid to 100°, and this resulted in much heat cracking of Jonathan and Delicious. This year there is no inclination for anxiety so long as the lead analyses are below .02 grain per pound and as a result most of the washing is being done with sodium silicate solutions at 100° or lower and acid solutions at 90° or lower. Some houses have been running without heating their solutions.

"Where the analysis shows more than .02 grain of lead per pound an arsenic determination is required. The District Horticultural Office reports that very rarely has it been necessary to have lots sampled for arsenic and that official samples seem to be running about as low on lead as in previous years--the great majority of them running in the 'double 0's.'

"However, this does not show that residue removal is generally just as effective with the less severe washing treatments of 1938 as it was in previous years. A large number of growers sprayed part of the year with cryolite. Many growers started the season with nicotine and molasses and had to end it with a few lead arsenate cover sprays. This means that many crops did not have as heavy a lead residue as previous crops had....

"From various experiences the one thing which seems conclusive to me is that with a tender variety such as Golden Delicious, the nicotine-bentonite spray program should be used so that all extra handling of apples through washing or wiping machines may be avoided.

SUBTROPICAL FRUIT INVESTIGATIONS

Dr. Hamilton P. Traub has just returned from Europe, where he attended the International Horticultural Congress at Berlin. On this trip, really a vacation trip, Dr. Traub visited 12 European countries. We hope that when he has time he will give the News Letter a brief account, at least, of his trip.

ADMINISTRATIVE NOTES

Mr. C. F. Kinman, formerly stationed at Sacramento, Calif., where he carried on fruit investigations, has been transferred to the Washington, D. C., office where he will take over much of the work formerly done by Mr. Gould.

Courtesy Cards. In connection with the use of courtesy cards issued to our personnel for official purchases of gasoline and oil at filling stations, there have been a few instances where the company issuing the card has sentin sales slips from filling stations not recognized as authorized dealers in their products. In such cases it is necessary to request the filling station to prepare a voucher to cover the sale, resulting in more or less confusion and delay, as these small dealers are not familiar with the preparation of the required forms.

Our travelers should make sure before making purchases that the filling station is one that is authorized to make such credit card sales and should also see that all essential information appears on the sales slip which the purchaser signs for the vendor, such as date, location, and name of vendor; the kind, quantity, unit price and total cost of the supplies purchased; the U.S.D.A. tag number of his car and whether it is a truck or passenger-carrying automobile. He should, of course, retain a copy of the vendor's sale slip so that he may verify the bill when presented at the end of the month by the company issuing the courtesy card.

Also in connection with the purchase of gasoline, Budget and Finance Circular No. 96, dated September 16, 1938, calls attention to the fact that the State of Wisconsin will not accept Form 1094 (tax exemption certificate) unless the gasoline is purchased from a licensed dealer of the State of Wisconsin.

Names and Titles. Handwriting being what it is rathen than what it should be, in some instances, the Business Office tells us it will be a decided help if names and titles of Division employees certifying vouchers are typed on Form 1034 and pay roll vouchers, under or close to the signatures. If your name and title is shown in type, you have wide freedom for that penmanship flourish in your signature!

ADMINISTRATIVE NOTES

Travel by Air Lines — Budget and Finance Circular No. 99, dated October 7, 1938, calls attention to the fact that effective August 1, 1938, new tariffs for travel by commercial air lines have been filed with the General Accounting Office, the new rates being equal to existing commercial fares. Any employee authorized to perform official travel, who may contemplate air line transportation on a comparative cost basis as authorized in Paragraph 8 of Government Travel Regulations, should first ascertain the probable excess cost to be incurred or savings to be effected by this means of travel.

Transportation by air lines will continue to be allowed without specific advance authorization or subsequent approval when the cost thereof, less (1) the amount of subsistence allowance saved by more expeditious travel, and (2) the amount of traveler's salary for the time thus saved, does not exceed the cost of rail and Pullman fare or steamer and stateroom transportation between the points of travel.

Actual cost of transportation by air lines will be allowed when it is conclusively shown that no other transportation was available and in cases of emergency when certified by the head of the Department. Actual cost will also be allowed when transportation by air lines is authorized in advance by the Secretary. In requesting the Secretary's approval in either case the request must be accompanied by a statement of facts on which the Secretary may rely, first, in forming an opinion as to the emergent nature of the travel, or second, as a justification of costs which otherwise would not be incurred.

In all cases requiring Secretarial approval in advance of proposed air lines transportation the letter of authorization and full explanatory data should be submitted sufficiently in advance to provide for proper consideration, also in order that travel may be performed by other means in the event that approval of air travel should not be obtained.

Changing — With reference to travel made necessary because of a change of station, Budget and Finance Circular 98, September 28, 1938, quotes a decision of the Acting Comptroller General (A-97268, Aug.30,1938) to the effect that when funds are available and justified and authorized by competent administrative authority traveling expenses of employees may be paid in connection with any transfer, not for the convenience of the employee, without regard to appropriations involved and regardless of whether the transfer is from one bureau of the Department to another and from Washington to the field or from the field to Washington. This supplements Par. 3435 of the Regulations. Make a notation to this effect in your copy. Any questions regarding change of station, as outlined in Par. 3435, should be referred to the Business Office.

ADMINISTRATIVE NOTES

Equipment Inventory — There is an old story concerning a man loafing around an express station who called out excitedly to the agent: "Here! The white rabbit that was in that box just jumped out and ran into the woods." The agent didn't appear to be much concerned. "He'll be back," he asserted confidently. "He doesn't know where he's going, because I have his number and address tag still."

The boys in the inventory section feel a good bit more confident, too, when the hold the number and address tag. It sometimes happens that employees who purchase equipment in the field fail to show the serial number on the voucher. It is then necessary for the inventory workers to write for this information in order that the records here may be complete. When you purchase equipment that bears a serial number, enter it on the voucher, and a permanent record can be made here for our inventory. The same thing applies to purchases made by the Washington Office of equipment that is delivered direct to the field office. In wirting us of receipt of the equipment in satisfactory condition--or otherwise--give serial numbers.

Meetings — For something over a year copies of Form 61 authorizing attendance at meetings have been forwarded to the General Accounting Office and are used in the audit of reimbursement accounts, says BPI Memo 1015 of October 6th. It therefore becomes important that the information carried on Form 61 is completely coordinated with the letter of authorization covering travel expenditures where attendance at meetings is involved It is requested that hereafter Form 61 be submitted along with the letter of authorization affected so that the information contained in Form 61 may be checked against the authority carried in the authorization. Necessarily, the authority on both must be in harmony. In order that the Form 61 and letter of authorization may be presented to the Bureau's administrative officers at the same time, it will be appreciated if all requests on Form 61 are completed on the reverse side, giving the necessary information for letter of authorization or amendment.

---and speaking of meetings, there's the American Association for the Advancement of Science meetings in Richmond, Va., December 27-31, 1938. As stated in Mr. Gould's memorandum for members of the staff, dated October 7, 1938, it is important that both abstracts and complete papers be submitted as promptly as possible. Abstracts must be in the hands of the secretaries of some organizations early in November and it will be difficult to get Bureau approval of complete papers after December 1. Recommendations for attendance by members of the staff should be submitted at once as they are to be sent to the Chief of Bureau not later than November 15. Attendance at Government expense is limited but it has been the policy of the Department in the past to be liberal in approving recommendations where employees pay all of their own expenses, other than salary.

RETIREMENT FUND

From time to time we have inquiries from employees concerning the sum to their credit in the Retirement Fund. Neither our Business Office nor the Office of Accounts is in a position to furnish this information as the fund is administered by the Civil Service Commission and accurate figures are supplied only when an employee is separated from the service. We can ascertain the amount deposited up to the beginning of the current fiscal year, of course, but it is difficult to figure accrued interest. However, anyone interested can arrive at the approximate amount to his credit by using the following data:

Deducation from the Civil Service Retirement and Disability Fund became effective August 1, 1920. Beginning with that date 2-1/2 percent of the gross salary was taken until July 1, 1926, when the deduction was increased to 3-1/2 percent. (From August 1, 1920 to June 30, 1924, the 2-1/2 percent deduction was taken on basic salary only, and not on bonus.) At the end of each fiscal year 2 percent interest is taken on the deposits for the currect year and 4 percent on the amount on deposit at the beginning of the same fiscal year. Therefore the amount accumulated at the beginning of the fiscal year, plus interest on same at 4 percent, plus the amount deposited for the current fiscal year with interest on same at 2 percent will be the amount credited at the end of each fiscal year. Beginning July 1, 1930, $1.00 per month is set aside from the 3-1/2 percent salary deduction for the tontine fund, which bears no interest. Thus, an employee to whom the Act applies, who received $2400 per annum August 1, 1920, and received a salary increase to $3000.00 on July 1, 1927 would have about $1,932.66 in the fund on June 30, 1937.

Fiscal year ending June 30:	Rate per year	Rate of deductions	Amt. of deductions	2% int. on current deductions	4% int. on total at end of previous fiscal yr.	Total in fund at end of fiscal year.
(Aug.1,'20 to 6/30/21)	2400	2 1/2%	$55.00	$1.01	---	$56.01
1922	2400	"	60.00	1.20	$2.24	119.45
1923	2400	"	60.00	1.20	4.78	185.43
1924	2400	"	60.00	1.20	7.42	254.05
1925	2400	"	60.00	1.20	10.16	325.41
1926	2400	"	60.00	1.20	13.02	399.63
1927	2400	3 1/2%	84.00	1.68	15.99	501.30
1928	3000	"	105.12[1]	2.10	20.05	628.57
1929	3000	"	105.12	2.10	25.14	760.93
1930	3000	"	105.12	2.10	30.44	898.59
1931	3000	"	93.12[2]	1.86	35.94	1029.51
1937	3000	3 1/2%	93.12	1.86	70.68	1932.66

[1] This amount is obtained by multiplying the half-month deduction as per Government salary table by 24.

[2] Amount of deduction, $105.12 less $12.00 tontine on which no interest is given.

Vol. 10 No. 21 November 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D.C., November 15, 1938 No. 22

Chrysanthemums Dr. A. C. Hildreth writes from the Cheyenne Horticultural Field Station that up to the end of October no fewer than 156 descriptions of chrysanthemums had been completed! This makes a total of 316 varieties that have bloomed at the station and been described. All told there are about 500 varieties growing at the Cheyenne station, which will give you an idea of how much we are doing to help along this popular flower. The popularity of the chrysanthemum is amazing for although its season lasts but a couple of months it ranks among the first half-dozen flowers in commercial importance--and has probably been written about more than any flower except the rose!

As this is written, we are having the 37th annual chrysanthemum show at the Department greenhouses here in Washington, with attendance records being broken every day. The display comprises a collection of 218 varieties of Japanese, 346 varieties of pompon and single and 11 varieties of Cascade chrysanthemums--some of which are new varieties originated in the Department greenhouses and some new commercial varieties introduced this year. All of the plants displayed, however, have been grown in the Department's greenhouses. A featured display is the large yellow variety of Japanese chrysanthemum named for Mrs. Roosevelt.

An excellent Press Service release on the show explained that in the greenhouse devoted to the display there are massed in a center bed 1,200 plants of the large-flowered Japanese varieties in colors including white and many shades of yellow, gold, bronze, lavender, pink, and deep red. Some of the flowers have petals with a contrasting color on the reverse. Most of these plants are grown so that they produce only one large flower. In form, the large-flowered types may be incurved, with petals close together turning into the center and giving the flower a distinctly globular shape--suitable for use at football games, of course!

"The anemone type is characterized by a prominent cushion-like center and regularly arranged petals," explains the Press story. "There are many other forms among the large-flowered types with many gradations between the globular and a rather flat shaped blossom. The petals may be fluted, flat, quilled or tubulated and of varying length from short, straight, spreading florets to long, drooping, twisted, or irregularly curved ones. At either end of the center bed are placed large exhibition plants, each of which has hundreds of flowers.

"More than 600 plants of the smaller-flowered pompon and single varieties, most of which are hardy, are placed on raised benches on either side of the exhibition greenhouse. Each plant bears several sprays of flowers in a color range similar to that of the large-flowered type. In form, they include single flowers, showing definite centers with one row of petals; the pompon type, which is more globular in shape: and the small button varieties. There are numerous gradations in form between these three types and the petals also vary in shape and size.

"Over the walks of the display greenhouse are suspended plants of the Japanese Cascade or Mountain varieties which have trailing branches of small white, pink, lavender, yellow, red and bronze flowers.

"Small pots of Vinca major with rounded grey-green leaves edged with white are placed in the front row between the pots of chrysanthemums on each side bench to form a pleasing combination.

"The first Chrysanthemum Show of the U. S. Department of Agriculture was held in the latter part of October, 1902, a little over fifty years after the flower was first introduced into this country. The Chrysanthemum Society of America did not hold its first exhibition until November, 1902. The Department of Agriculture has held a show each year since the first one.

"These exhibitions have been attended by thousands of people from Washington and near-by States. Since the Chrysanthemum Shows were inaugurated, Department of Agriculture hybridizers have developed many new varieties of chrysanthemums so that of the current display more than 400 varieties were originated in the experimental greenhouses where the exhibition is held."

A striking feature of the event is the bus loads of children who come from nearby schools to view the exhibit. Members of garden clubs are also prominent among the spectators, taking notes on the varieties. Some of these experts have spent so much time with the flowers that they are now able to spell the name chrysanthemum without reference to a dictionary; in fact, we have one or two specialists on our staff who can do the trick!

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"Upon a visit to the Santa Clara Valley last week it was found that the pear harvest was practically finished, with all production records having been exceeded for this district," he writes October 15. "Incomplete records compiled by the Federal State Inspection Service indicate that the crop of Hardy pears alone would exceed 1,400 carloads, about twice the production of 1937. Estimates were being made that the total crop of all varieties of fall and winter pears in the Santa Clara-Watsonville district would reach 3,000 carloads. Prices have been unsatisfactory to the growers for most varieties. Bartlett pears brought $15.00 per ton for No. 1 fruit as compared to $25.00 in 1937. Hardy pears, most of which are shipped to England, will probably not average 50 cents per box net to the grower. Growers with high yields, and there were some that reported 40 tons per acre this season of this variety, can make out at this price, but there are many instances where the return will not take care of expenses. For the first time in the history of the district, only about 40 percent of the Winter Nelis crop will be packed. The growers and packing concerns have decided not to invest 55 cents in packing charges for fruit that at current prices is worth 30 cents per box to the grower. Instead, the pears are being washed and graded and stored in field boxes for Los Angeles and other coast markets. Most varieties were picked this past season well within the recommended range of maturity. Some Hardy pears were picked more mature than was probably desirable due to the size of the crop and the inability of the pickers and packing houses to keep up with the ripening of the fruit. Experimental lots of pears picked at different maturities as judged by elapsed time from full bloom, pressure test, refractometer and other indices are being ripened after various storage periods and records taken on storage disorders and dessert quality.

"Storage varieties of grapes are now being harvested. Shippers report that the quality of most varieties has been poorer than last season, the grapes being less firm with more water-berry and poorer color. This is true of the Emperior grapes now being packed, judging from the fruit seen in packing houses recently. The rains experienced over the past three weeks, while only amounting to about 1/4 inch, have started mold growth on the fruit in the vineyard and will no doubt result in considerable storage trouble from fruit rots. This season has witnessed the construction of cold storage and precooling plants by grape growers and shippers as part of their packing house equipment. Two were constructed in the southern part of the San Joaquin Valley, each plant with a capacity of 40 to 50 carloads of grapes. To save initial investment in compressor and cold storage equipment, the rooms were constructed with ice-bunkers and fans at one end of the room, ice being used to cool the fruit and take care of the largest part of the heat load. After the fruit is cool, a 10 h.p. compressor is used to supply the small amount of refrigeration required to hold all the room at 32°F."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Commercial fruit washing operations have generally been attended with less trouble than has been the case in several years," he writes October 13th. "Exceptions to this freedom from trouble occur where fluorine residues are involved and where, as in the Yakima district, the higher lead tolerance has inspired growers to start washing and packing their own fruit. Where they have sprayed with mineral oil and attempted to do their cleaning with flotation machines, trouble has followed. In the large packing houses equipped with dual process washers, an unusually small number of samples have 'gone over the tolerance' on lead and arsenic. Considering the amount of cryolite used in this district, the removal of fluorine residues thus far has been very satisfactory though this side of the problem has given packing house managers considerable anxiety and has been responsible for much higher washing solution temperatures than otherwise would have been the case.

"Reports concerning and observations of injuries from washing operations have been fewer and the injuries observed have been less severe than in any year since I came to this station. Although the higher lead tolerance unquestionably has contributed to this pleasing situation, not by any means can sole credit be given to it. Many Jonathan and Delicious apples have been washed in treatments as severe as those used in previous seasons in order satisfactorily to remove fluorine residues. The condition of the apples this year seems to be such that they will 'take it.'

"Until October 12 we had no cold nights and as the advent of cold nights usually is associated with difficult cleaning we may be approaching the season when reports on fruit washing progress will not be so favorable.

"Poor coloration of Delicious apples has been responsible for a long, drawn-out harvesting season for this variety, and parts of some crops are still on the trees. Although abnormally warm weather prevailed during September, the development of water core was less pronounced and later than usual. Now, after 169 days from full bloom, water core may be found in nearly every Delicious hanging on the tree, but the tissue affected frequently is not extensive. As the night temperatures have not been low until last night, and as we usually have serious water core development at such locations as Leavenworth where Delicious are not harvested before low night temperatures occur, the question is raised as to what relationship might exist between cold nights and water core development. It is difficult to conjecture what effect this change of temperature might have on enzyme action or on enzyme inhibitors."

NUT INVESTIGATIONS

C. L. Smith, Brownwood, Tex.

"The data of injury caused by the April 8-10 freeze has been summarized. Out of 500 Burkett pecan trees set in 1932, 17 are dead; 23 have tops dead to ground level, with shoots coming from the crown; 25 have over 25 percent of shoots dead to second or third year wood, with weak shoots coming from older wood and heavy suckers from lower part of the trunk; 10 have somewhat less than 25 percent of shoots killed; 13 have but a few dead shoots, with reduced foliation on upper part of top, lower half of top apparently normal, and few or no suckers from ground level; and 10 suffered minor damage, as evidenced by reduced foliation. There are only 12 Western Schley and 9 Jersey trees showing signs of injury. Trees of all varieties were delayed at least a month in growth development in the spring due to the freeze damage. The apparent reason for the severe damage to Burkett trees was that they started growth earlier, hence some of the heaviest damage was done to the most vigorous trees.

"A check-up was made of the seedling chestnut trees planted 2 years ago. Most of these have died and none have made any appreciable growth. Apparently the soil and climatic conditions here are not suitable for chestnut growing. The Persian walnuts tried have not grown either.

"At a meeting of the West Texas Pecan Growers Association on September 27th, the new laboratory building was formally presented to the Department."

John R. Cole, Albany, Ga.

"The contrast in foliage on the randomized plots presents an interesting scientific study," he comments October 29th. "Although there is very little evidence of foliage disease or leaf scorch on the check trees, practically all of the foliage is dead and considerable defoliation has been the result. On the other hand, the foliage on the trees sprayed with the bordeaux mixture is still green. This stimulation of foliage is no doubt coming from both the copper and lime in the bordeaux mixture. It has been my observation that trees fertilized with cyanamid hold their foliage longer than those fertilized with other forms of nitrogen.

"Of course we consider the shuckworm enemy No. 1 of the pecan industry, but the blue jay will almost rank as No. 2, especially with the Schley variety. The blue jay has a better knowledge of varieties than some growers of long experience! It is my guess that one of these blue jays will destroy and carry off a pound of Schley pecans daily. That is why we must patrol the experimental plots from the time that the nuts begin to ripen in the early fall until harvest has been completed....And, speaking of harvesting nuts, we made the first one in the Taylor orchard the week ending October 22. The foliage is so heavy on the sprayed trees that it is difficult to estimate the percentage of the crop that we harvested."

NUT INVESTIGATIONS

Milo.N. Wood, Sacramento, Calif.

"A number of people have interviewed me regarding orchard troubles and in a few instances I have gone out to see what the troubles are," he writes for the week ending October 22d. "I find that in one particular case several acres of young almonds have been pulled out because of the tops of the trees dying. The grower thought that the trees were infested with a disease and probably had oak root fungus infestation of the roots. However, the description of the trouble did not fit the latter theory. I made a careful examination of the tract of land and find that the trees had been given the best of care but were dying. The so-called oak root fungus was simply a secondary fungus infection of another nature on the roots that had already died.

"Only about 10 percent of the trees were living and looking thrifty. These trees were scattered throughout the tract. An examination of the rootstock showed that the graft union was at fault and that the particular peach stock made a poor union. As is frequently the case with the almond, a poor union results in the gradual death of the tree when the trunk reaches a diameter of four or five inches. This same root trouble has been found occasionally for a number of years. Furthermore, the trees seem to die faster when such roots are in heavy soils....So far as the rootstock question is concerned, it is clear that it is becoming more important each succeeding year. Some recently planted orchards are already suffering from poor rootstock."

He had written October 15th: "Almond growers and some almond buyers have become very much concerned about a new trouble which has come to light for the first time this season. In some of the districts a small black ground beetle has multiplied very rapidly this season. There was so much agitation about this matter that I found it advisable to make a thorough investigation in the field. Contacts were also made with officials of the California Almond Growers Exchange, with growers and with members of the Entomology Division of the University of California, especially with Dr. Essig and Dr. Lamiman.

"After considerable study in the field, I am convinced that the damage done by these beetles is much less than expected. I found that most of the damage was done by the peach twig borer, which has been very bad this year. There was also much confusion in damaged kernels due to the fact that some were injured by the peach twig borer, some by the chipping of almond hullers and almond crackers, and some by the beetle. Most of the injury was characteristic of the peach worm. Growers claim that buyers were 'docking' them for the chipped or scratched kernels, considering such kernels as insect damaged nuts. Owing to the confusion all around, it was deemed well to inform as many people as possible as to the types of injury and the

NUT INVESTIGATIONS

Milo N. Wood (continued)

methods of ascertaining what the injury was due to. The damage by the peach worm is very pronounced and easily distinguished from other types of damage or insect infestation. The beetles damage only the nuts that have openings in the shell caused upon paper shelled varieties by the tearing away of portions of the shell by the hull in dehiscing and to a greater extent by breaking away of the wing of the hull in the hulling process.

"To a certain extent the beetles climb the trees but it is probable that most of the injury is caused by the beetles working on the drying trays, especially where they are put out on cut alfalfa plots or grass plots for drying. The beetles chip out little places on the edge of the kernel and in some cases the injury resulted in merely the removal of little pieces of the pellicle much the same as one could scratch the kernel with his thumbnail. It seems probable to all who are familiar with the activities of this beetle that it will not become a serious menace, although some growers believe that this remains to be seen. In the 'wire worm' stage, the worms exist in decaying fruit and decaying vegetable matter and probably are encouraged by the late cover crops grown in certain districts. So far as can be seen, about the only practical way of keeping the insects down in number would be to plow the cover crop under much earlier than is now done in some of the irrigated sections and to burn up all the decaying fruit and almond hulls.

"The serious matter is the peach twig borer damage to the nuts. The life history and method of the peach worm have been thoroughly worked out in the past and directions for spraying have been published in the almond bulletin already issued. The fact remains, however, that unless the percentage of loss is heavy from this worm, growers cannot afford to spray. All the wormy kernels are removed before they reach the market and the growers' receipts are based on the remaining good kernels. Unless the amount of wormy kernels subtracted from the weight of the crop delivered is sufficient to equal in value the cost of spraying, growers would not consider spraying justified."

ADMINISTRATIVE NOTES

Christmas Mailings — The Post Office Department is making its usual request that we try to arrange for the deposit of bulk mailings and registered matter not having urgent time value, either before December 10, or after December 25. Such bulk mailings not only seriously interfere with the expeditious handling of Christmas mails, but, owing to the heavy weight of many of the mail sacks thus filled, no doubt cause more or less damage to fragile Christmas parcels mailed at this season of the year. So, please arrange to have all bulk mailings of supplies, etc. started out before December 10--or held until after December 25.

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"The harvest weight of the station pecan crop this year is 11,000 pounds," he reports October 29th. "This is 60 percent of what was expected, but far superior to production in other orchards. The best yielding tree this year was a Mahan tree with 81 pounds. The average production on Mahan was 50 pounds per tree, which puts this variety considerably ahead of all others for production.

"Much of the reduction in yields this year can be attributed to the ravages of the shuckworm and some to other factors that caused a late drop and poor filling of the nuts....No summary or analysis of the data has been possible as yet, but it seems that the best quality nuts were obtained from the trees growing on sandy soil. Also, those trees that maintained their foliage in a healthy condition longest produced the best quality nuts."

Writing October 21 he said: "A summary of the Schley and Success yields of the adjoining summer cultivated plots shows that yields have been two to three times as large on the cultivated plots as on the bermuda plots. This difference has amounted to an average of 7-1/2 lbs. per tree in favor of the trees given cultivation. No summary has been made of any other yields, but observations at harvest showed that the bermuda plots receiving nitrogen fertilizer yielded only slightly better than did the unfertilized bermuda plots, and that the yields on the plots that received a winter non-legume cover crop were less than that on the plots receiving a winter legume cover crop.

"Observations were made this week of the foliage conditions on the trees on the station. This showed that of the 34 varieties tested for control of defoliation 30 of these varieties showed benefits from the application of bordeaux spray. Five varieties have no foliage on unsprayed trees, and the unsprayed trees of 9 varieties have less than 20 percent of their foliage at the present time. Mahan is the only variety that is holding its foliage 100 percent on both the sprayed and unsprayed trees."

Howard E. Parson, Shreveport, La.

Writing from the U. S. Pecan Disease Field Laboratory on October 29, he says, speaking of work done in connection with taking notes on the control of foliage diseases in plots in the Webb orchard, "The first harvest was begun from these plots on October 20th and finished October 26th. The average yield per tree so far on 112 sprayed trees has been 52.8 pounds, whereas the average yield per tree for 29 unsprayed trees has been 28.8 pounds per tree."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung Investigations)

"There are now in the laboratory, stored in drying racks, individual samples of nuts from 123 selected trees--53 from Louisiana, 27 Mississippi, and 23 Alabama. In most cases the samples are of sufficient size to allow 25 fruits for chemical analysis and enough seed to produce 200 to 250 progenies. In addition, 29 samples of fruit have been collected for chemical investigations dealing with variability of oil content of individual fruits, effect of harvesting date on quantity and character of oil, and revlation of storage conditions to oil content."

During the October 17th to 29th period the offices in Florida and Georgia were visited and an inspection made of the tung trees being selected for propagation and breeding.

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on October 29th he says: "Most of the harvesting in the Brown tract at Philema has been completed and the nuts from the experimental blocks have been sized. The yields were lower than expected, because of inroads made by squirrels, jays and crows, in spite of fairly constant efforts at control. Nut size is proving to be as small as expected and, although filling is excellent, the yields are materially reduced by this factor. Additional trees in the hybrid orchard were harvested. It is noted that trees previously producing nuts of poor quality due to poor filling are producing well filled nuts this year. This is probably due to the much smaller shuckworm infestation this year. Nut size is proving to be about two-sixteenths of an inch smaller this year than last but filling is good in most instances. The yield of nuts in the Stuart thinning and pruning experiment was better than in any previous year. The outstanding feature this year was the relatively heavy yields of the trees in the check plot and the light yield and very small size of the nuts from the trees in the heavily fertilized, unthinned plot. The largest and best filled nuts were from the unthinned, heavily pruned trees."

Paul W. Miller, Corvallis, Oreg.

"An examination of representative samples of nuts from the bordeaux sprayed and the untreated plot, respectively, revealed the fact that there were approximately three times as many blight culls in the crop from the untreated plot. The crop from the plot sprayed with copper oxalate 1-1/2 - 50 was also freer from blight culls than the unsprayed plot, there being almost three times as many blight culls in the untreated plot as in the copper oxalate sprayed plot."

DECIDUOUS FRUIT INVESTIGATIONS

G. A. Heckstroth, Willard, N. C.

"On September 13 Darrow, Morrow and I visited the blueberry farm of H. G. Huntington at Atkinson, N. Car.," he writes from the Coastal Plain Station. "Mildew was found on the upper surface on Cabot and on the lower surface on Pioneer. I believe that mildew was worse on Pioneer than on some of the other varieties. There are also several leaf spots, the cause of which is not clear. It appears that some of the spotting may be due to early mildew infection, but some of the spotting is doubtless due to some leaf spot fungus. Numerous pycnidia were found in some of the sharply delimited spots on Rubel. Much variation was found in the amount of mildew in the U. S. Department of Agriculture seedling block. Some seedlings were heavily mildewed, while others were free of it....

"In the variety Cabot there has been quite a bit of summer blooming resulting in a partial fall crop which is ripe now--September 17th. On some plants there is almost a third to half a crop. I took a number of buds to the laboratory and found that they are infested by a thrips or mite which was found in abundance last spring and suspected of being responsible for blighting the buds last spring and preventing their opening. I did not find the insects present in great numbers, however.

"At B. C. Crabbe's blueberry planting at Magnolia, N. Car. I found mildew worst on Pioneer and least severe on Scammel. Leaf spotting is worst on Cabot. I ran across some interesting pruning results here. At the suggestion of Mr. Morrow, Mr. Crabbe had tipped some of the branches on a number of rows of Cabot with the result that they had put out a number of short branches at this point and this had prevented the summer bloom and setting of the fall crop. Some fruit buds were seen on these new branches that had been formed. It may be possible that the fall fruiting may be held in check by this summer tipping. The fall fruiting seems to be confined almost entirely to the variety Cabot.

"During the week ending September 17th, I took notes on grape diseases in the station vineyard. Cercospera leaf spot, which was just appearing August 25, had become serious on quite a number of Muscadine varieties. There was also much variation among Muscadine varieties in the amount of black rot injury to the fruit. Injury to the fruit consists of sharply delimited circular spots or warty callous growths, both of which are bearing numerous typical pycnidia. The fruit does not rot and mummify as is the case with the northern bunch grapes.

In some of the varieties about half of the fruit has been ruined by the bitter rot fungus, Melanconium. The mummified fruit still hangs on the vine. This bitter rot does not appear to be very serious with our standard Muscadine varieties, but is the worst on some vines in our Muscadine collection in block three."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"The cause of the 'measled' condition of Bosc pear bark and the associated fruit pitting has now been definitely determined," he writes in his September report. The disease is of virus origin and has been readily transmitted to healthy Bosc and Anjou trees by budding. The Bartlett variety was found to be either tolerant or immune by the same method. Because of the comparative rareness of virus troubles on pome-fruit trees, and the practical questions which immediately arise in relation to orchard management in this connection, the disease assumes considerable importance.

"As an example, surveys made at Hood River, have revealed practically every Bosc orchard to contain from a few to as many as 70 percent of the trees infected to some degree. Whether infected trees should be eradicated from an orchard, or whether slightly infected trees might be topworked to tolerant or immune varieties with safety, must be determined. The similarity of mildly pitted Anjou fruits to the condition in this variety termed drought spot in other districts, raises the question of how generally the virus occurs in pear plantings in the United States. It is known to be present at this time in California, Oregon, and Washington, but will probably be found outside this area. The disease has been named 'Stony-pit', and 'Oak-bark' for the symptoms occurring on the fruit and bark respectively...

"Pear Scab.--Counts have been made in the pear scab plots, but the data have not yet been assembled. The most noticeable feature in the plots was the extreme russet present on the fruit. It appears probable that unusually hot weather, oil sprays over sulphur (even though delayed beyond the usual danger point), and several other factors contributed towards russetted fruit. The greatest factor in the russet production, however, resulted from heavy dews during the past month. The copper phosphate plot again showed much less russet than unsprayed pears.

John C. Dunegan, Fayetteville, Ark.

"The fungus isolated from young apple measles-like spots on twigs sporulated during the week ending October 8th and proved to be none other than the Coniothyrium that occurs so abundantly on apple leaves as a secondary organism. It very probably is only a secondary organism on the twigs. There is a possibility, however, that the very small spots on the twigs are due to this organism and while they resemble measles spots, the spots really do not represent true apple measles. The possibility is being investigated as a part of the problem dealing with identification of measles symptoms in the very early stages."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Grape production records were completed at the Fresno station during the week of October 16th, with the harvesting of the Emperor and Ohanez grape varieties. In general the fruit weight production tended to be slightly lower for the 1938 season compared to 1937. Sultanina gave an average production on all rootstocks of 9.4 tons per acre for 1938 compared to 12.3 tons per acre in 1937. Maraville de Malaga yielded 11.9 tons per acre in 1938 compared to 13.2 tons per acre in 1937. However in the case of the white Malaga where our pruning system was extended and more wood left at pruning in 1938 over that left in 1937, the yield showed an increase in 1938 from 6.6 tons in 1937 to 12.3 tons in 1938. The production was satisfactory considering the age of the vines. The above production figures were obtained from a stock test block in which the stock rootings were planted in 1932 and the vinifera buds inserted in the stocks in the fall of 1932 but did not start to grow until 1933. Thus the root systems were 6 years old this past spring while the vinifera tops were 5 years old."

ADMINISTRATIVE NOTE

Retirement Under the provisions of the Civil Service Retirement Act, an individual who has been employed in a Government position not secured through competitive examination but who later is appointed to a classified position as the result of such an examination may, if he so desires, deposit with the Treasurer of the United States the amount that would have been deducted from his salary for the retirement fund during his service prior to his appointment to the classified position.

For example, an employee who has served as a full time Agent (unclassified) since July 1, 1926, and is later appointed to a classified position as the result of a competitive examination, can obtain credit for retirement purposes for the period of his unclassified service by depositing with the Treasurer of the United States 3-1/2 percent of his basic salary for the period involved, together with interest at the rate of 4 percent per annum, compounded on June 30 of each fiscal year. Installment payments may be made. However, failure to make deposit does not forfeit the employee's right to annuity nor does he lose credit for later service.

In computing service credit no exception is taken for absence on leave without pay, if not in excess of six months in any calendar year, each calendar year being considered separately for this purpose. Therefore, an employee might be on leave without pay from July 1 to June 30 of the following year with no deduction made from his service in connection with retirement, since the absence in either calendar year was not in excess of six months, but of course there is no monetary credit nor can deposit be made to cover the period of leave involved.

ADMINISTRATIVE NOTES

Photographs: Outside use. From time to time we are asked by publishers, Experiment Station and Extension specialists, and others for photographs to illustrate articles being prepared for publication. Usually the requests cover one or two or at least a small number of prints of the smaller sizes. It is the general policy of the Bureau to supply photographs that have been used in our publications, the prints being mailed under Mr. Gould's signature, stamped: "This photograph is furnished with the understanding that if used it will be noted 'Reproduced from ____.'" Too, it is occasionally permissible to furnish photographs that have not been published, for use in special articles primarily presenting the results of some phase of our work, care being exercised to make sure none are supplied that we might wish to use later in our own publications. Such unpublished photographs must be submitted to the Chief of Bureau, through Mr. Gould, for approval, and if approved are sent out under the signature of the Chief with the statement that if used no credit need be given the Department.

The drain on any one section for such photographs is small but the total for the Division may reach a considerable volume during the year. For this reason where any considerable number is asked for, or there are technical details that increase the cost of supplying them, negatives may be sent to the Office of Information which will provide the prints and make a nominal charge for them, the money being deposited in the Treasury, where it may be credited to the appropriation charged with the cost of making the prints. (After an extensive study by a committee, incident to legislation by the 75th Congress, the whole matter of supplying photographs and other illustrative material for outside use was summed up in Memo. 755, Office of the Secretary, May 11, 1938, outlining procedure and fixing prices.) In general, we are permitted to supply free to newspapers, magazines, publishers and cooperators such photographs in limited quantities, with the understanding that the recipient shall use the reproductions in the public interest and in accordance with the regulations. This gives us a broad field in which no charge need be made for photographic prints where their use will be to the best interest of the Government. Send all such photographs to Mr. Gould for approval and transmittal.

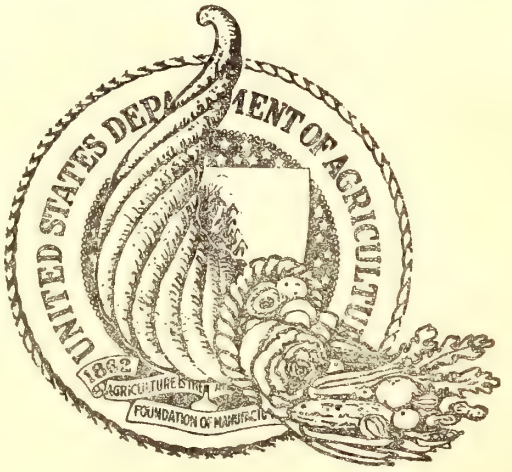
All this emphasizes the importance of the policy outlined in Mr. Gould's Memorandum for Section Leaders, dated November 22, 1937, in which he pointed out the desirability of having negatives of published material readily accessible so that requests for extra prints may be met promptly. The plan involves the filing of the bulletins of the Division in our photographic section, with notation beside each illustration showing the number of the negative, where it is filed, etc. Preferably, the negatives of each publication as issued should be turned over to the photographic section along with a copy of the bulletin with the illustrations marked to show negative numbers, and this is the plan being followed by some of our section leaders, even those who prefer to retain their general photographic files in their own office.

Vol. 10 No. 22 November 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., December 1, 1938 No.23

Sweetpotato Starch Plant

"In company with Dr. Lutz, the Laurel Sweetpotato Starch Plant was visited during the week of October 15," writes Dr. Geo. P. Hoffman from the U. S. Horticultural Field Station, Meridian, Miss. "Starch potatoes are being ground and made into starch 24 hours per day and 7 days per week. Between 3,000 and 4,000 bushels of potatoes are being ground per day. Farmers are apparently well pleased with sweetpotato money returns and the Starch Plant seems to be getting its maximum capacity of potatoes this year. Better methods are apparently being perfected in the Plant operation each day, and the ease with which the large volume of raw material is being handled is certainly an eye-opener to the visitor."

The New Orleans Times-Picayune recently had an interesting account of the start of the fifth season at this Laurel, Miss. starch plant this year—the only plant in the United States where white starch is made from sweetpotatoes. Indications point, it says, to the most successful season to date, the output for the season, ending about January 1, being estimated at 2,000,000 pounds. Farmers have produced approximately 200,000 bushels of sweetpotatoes for the plant this year. Naturally, interest in sweetpotato growing has increased steadily since the plant was started in 1934. That year only 25,000 bushels of sweetpotatoes were produced. Following years showed productions of 31,000, 43,000 and 59,000--and the production is expected to reach 200,000 bushels this year.

Our Division is actively cooperating with the Bureau of Chemistry and Soils and the southern Experiment Stations in this sweetpotato starch development, expecially with reference to variety improvement and growing practices.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman, Vegetable Crop Investigations.

"The greater part of the week was spent with Dr. Julian C. Miller at the Louisiana Experiment Station in Baton Rouge and in the Sunset, La. sweetpotato section," he reports for the week ending November 12th. "It is impossible for one to visualize the great and extensive scope of the Louisiana sweetpotato work in both its experimental and commercial aspects. In the Sunset section they are actually shipping car lots of sweetpotatoes 10-1/2 months per year and during the remaining month and half, equivalent car lots move by truck. A house having a capacity of 45,000 bushels in that section is a rule rather than the exception. The quality of the product which I saw and the highly perfected methods by which the product passes from the farmer, through the curing house, and finally to market surpasses anything having to do with the sweetpotato production and handling that I have ever before had the opportunity and pleasure of seeing.

"The Porto Rico variety is grown exclusively in this section, with Miller's 'unit one' strain being in favor. Sweetpotatoes are well at home in the Sunset, La. section as both soil and climatic conditions apparently favor high yields, good quality, and low production and curing costs. Growers are apparently well pleased with prices of 40 cents and 30 cents per bushel, excluding the cost of the crate or bag, for U.S. 1's and 2's, respectively. It was interesting to observe that artificial heat is not used in curing potatoes in the Sunset district and that the houses generally are little more than a good tight shed--constructed of an outside wall of double thickness with a layer of building paper between the sheathing and siding, ventilators in the sides and top, interior unceiled and a ground floor over which the potatoes are stored in crates and on a slatted platform. Soil rot--a field disease apparently not generally prevalent, and of which it appears that little is known, except its depressing effect on yields and quality--is a problem of much concern among growers and investigators in that section at this time. Apparently, this trouble is worse with some varieties than others and where sweetpotatoes have been grown on the same ground over a long period of years. Consequently, the development of resistant varieties together with better rotative and sanitary measures offers promise and encouragement. It should be of interest to say that the Sunset district is about 70 miles due west and south of Baton Rouge, is largely of French people, and its sweetpotato industry was developed along highly specialized lines making outstanding success during a period of less than 20 years.

"The work which is being done in the development of the cabbage, carrot, tomato, onion, sweet and Irish potato strains and varieties by Miller and his associates at the Louisiana State Experiment Station is extremely gratifying and interesting. Thousands of sweetpotato crosses are being handled through the special treatments and methods applied by the investigators at L.S.U. It was interesting to observe that one of our U.S.D.A. numbers (47442) is apparently showing promise because of being more resistant to soil rot than other varieties planted alongside."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman, vegetable crop investigations. (continued)

"Asparagus cutting in the 'fall cut' plots is progressing in a very satisfactory manner and the uields, though not as great as in the spring, are fair to good," he wrote October 8th. "It might appear that we are cutting a 'grass' of more tender quality than during the spring. Spears are generally smaller in size than during the spring cutting period, with the percentage of 'small' spears being conspicuously greater than other grades."

He had written October 1: "Tung nuts are falling, and the few chestnuts here and there in the seedling planting are ripening rapidly. Chestnut leaf spot is generally prevalent and bad at this time, one group of seedlings ('peach leaf' type) excepted which shows no signs of this diseases. Grape foliage is holding on unusually well and the vines have made very vigorous growth. Peach trees in the station orchard seem to be shedding the foliage somewhat earlier than they should. The strawberry planting is standing the drought very well which also applies to the Youngberries but the Boysenberries are suffering badly.

"growers are beginning to harvest sweetpotatoes here and there in this section but the harvest is in "full swing" in the vincinity of the Laurel, Miss. starch plant. Yields are generally much less than expected because of unfavorable growing weather, but the percentage of cracked and 'Jumbo' roots is small and will likely help out in the larger yield of marketable roots."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

Important from the standpoint ofprolonged dormany of peach trees when not enough hours below 45°F. have accumulated, is a comment in his report for the week ending November 14th. "The temperature dropped to 35°F. on November 9th," he writes, "but as yet we have had no general killing frost. The total hours of cold are now 52, compared with last year's total of 125 hours for the same period. The warm weather we are having would be much more serious from a dormancy standpoint were it to occur in December or January when the hours of cold should be accumulating rapidly."

He had written earlier, discussing treatments to break the rest period and overcome prolonged dormancy in peach trees: "A group of Hiley and Early Rose twigs were brought into the greenhouse ans sprayed with chemicals dissolved in oil. One lot was treated with a 1 percent oil emulsion instead of the usual 3 percent, with the concentration of DN unchanged. Others received various concentrations and combinations to determine a safety point. Twigs treated three weeks ago now have fruit buds in the green stage, almost ready to show pink."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

"Some Newtown apples were brought to the office showing what appeared to be typical acid injury," he writes November 1. "This fruit was never washed, however, and the cause of the injury remains uncertain. The growing season was responsible for several unusual fruit injuries; a hot spell occurring quite early which caused severe injury to pears in many cases where wettable sulphurs were applied at that time. Other orchards receiving the same material, but a few days previous or after the hot days showed only slight injury.

"Our pear scab tests ran amiss this season due to the injury stated above. Extreme russetting occurred on the Anjou pear. While the trouble appeared worst in the orchard where a heavy crop of red clover had become established, injury due to the sulphur sprays was unmistakable. A general correlation between heavy cover crops and fruit russet was apparent over the Valley generally. This effect undoubtedly is an indirect one, in that moisture retention after the sun appears probably 'burns' the skin of the fruit much like a magnifying glass would; the moisture droplets acting as the lens.

"An ideal fall harvest season occurred and the crop as a whole was of marvelous quality. Anjou fruit ran rather large and was spotted as to russet. In general, picking was delayed slightly over previous seasons, which I believe will increase both its quality and keeping properties."

H. F. Bergman, Amherst, Mass.

"All lots of cranberries from experimental spray plots were screened between October 26th and November 3," he writes. "Due to the fact that there is more rot in cranberries this year than for several years past it has been a good season to test the ability of various fungicides to control rot. The only trouble is that almost all the fungicides used failed to give really satisfactory control. Bordeaux 5-3-50, using rosin fish oil soap, penetrol or sodium salts of sulphonated diphenyl compounds all did about equally well, reducing the rot to about one-third of that in the check plots. Red copper oxide with bentonite did not give as good control this year as did the bordeaux, although last year it did somewhat better than the bordeaux on the one bog on which red copper oxide was used.

"Another red copper oxide commercial preparation which is sold in fluid form ready for use after dilution with water not only failed to control rot but on most plots on which it was tried actually increased the amount of rot over that in adjacent check plots. A bordeaux 5-3-50 to which some zinc arsenite was added gave the best control of any fungicide tried but this combination was used only on two small plots on the State Bog. If it continues to show up well during the storage season more extensive trials will be made next summer."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

In addition to Armistice Day, the workers of the section need not be surprised if Mr. Fisher starts action to secure at least one additional national holiday for them! You know, to celebrate the astonishing reception being given to their work. The latest compliment is in the amazing demand for the new market disease publication--Miscellaneous Publication No. 292, "Market Diseases of Fruits and Vegetables: Crucifers and Cucurbits," prepared by Glen B. Ramsey, James S. Wiant and George K. K. Link. In one day recently, Mr. Gilbert's office received 106 requests for copies of this bulletin--which must be something of a record.

Unfortunately we are not able to distribute these bulletins free. The color plates, necessary for an adequate picture of the disease results, so adds to the cost that we were able to order but a small edition for free distribution and these copies have been needed for market inspectors, county agents and other Federal and State workers who use them in connection with their official duties. Manifestly we are unable to supply copies free to the general station worker or agricultural instructor. The superintendent of Documents, Government Printing Office, Washington, D. C., has a supply that he sells approximately at cost. There are now five publications available in the series:

Miscellaneous Publication No. 98, "Market Diseases of Fruits and Vegetables: Potatoes," 30 cents a copy;
Miscellaneous Publication No. 121, "Market Diseases of Fruits and Vegetables: Tomatoes, Peppers, Eggplants," 20 cents;
Miscellaneous Publication No. 168, " Market Diseases of Fruits and Vegetables: Apples, Pears, Quinces," 40 cents;
Miscellaneous Publication No. 228, "Market Diseases of Fruits and Vegetables: Peaches, Plums, Cherries and Other Stone Fruits," 20 cents and
Miscellaneous Publication No. 292, "Market Diseases of Fruits and Vegetables: Crucifers and Cucurbits," 45 cents.

Dean H. Rose, C. O. Bratley and W. T. Pentzer, have another one on the way, covering the market diseases of grapes and small fruits. The color plates from all of these publications are also issued in the form of posters, printed on cardboard, 7-1/2x12 inches. They are also sold by the Superintendent of Documents. Orders for both bulletins and posters should be sent to him, of course, as the Department does not sell its publications. Remittance may be made by check or postal maney order payable to him--or by cash, at sender's risk.

Incidentally, Ice and Refrigeration for September gives almost a full page to a review of Technical Bulletin 613, "Market-Storage Studies of Honey Dew Melons and Cantaloups," by James S. Wiant; and even more space to Circular No. 278, "The Connercial Storage of Fruits, Vegetables and Florists' Stocks," by Dean H. Rose, R. C. Wright and T. M. Whiteman-- in fact it is being reprinted practically in full!

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung Investigations)

"Final tung tree selections were made, bringing the total for this office up to 115 trees," he writes November 12th. "The work of gathering samples for the investigation of variability in oil content of individual fruits, trees and localities was also completed. This project is on a cooperative basis with the Bureau of Chemistry and Soils.

"A conference was held with Dr. Ragland and others concerning the cooperative tung farm being established near Cross Roads, Miss. Sites for two small houses, a tool shed and barn were chosen, and arrangements made for stumping and breaking about 300 acres of the land. A nursery plantation will be established here this winter in which propagation experiments will be carried out, and progenies from our selected trees will be reared. These trees will then be planted in test orchards in various parts of the tung belt. Cooperative field plot experiments will also be established here."

F. S. Lagasse, Gainesville, Fla. (Tung Investigations)

In an interesting letter to Dr. Crane, reporting on progress in getting the tung investigational work under way in Florida, he says that the studies already made are giving information of practical value in connection with harvesting problems. Early in October he found some of the growers knocking green fruits from the trees, others leaving them, and still others had the nuts already harvested and in the drying bins.

"This latter is a condition I believe the growers will regret," he comments. "I have found plenty of mold present in such bins and believe that sprouting will occur unless real cool weather occurs and persists, doubtful at this time. This takes us right back to the fact that urgent information is needed on the comparative oil content of early and late maturing trees, for if the late maturing ones should not prove to be any higher in oil per acre, we should discard them from our selections immediately and not use them in our breeding, for the desirability of earliness of maturity is being impressed on me more and more as I see the various growers going about their harvesting operations."

J. H. Painter, Cairo, Ga. (Tung investigations)

"At the close of this week 22 selection have been made in that part of Florida which is in the territory covered by this district," he writes in his report for the week ending November 12th. "A decided difference in the ability of certain trees to retain foliage has been noted in the Chase orchard. I am still at a loss as to the explanation for the fruit clinging to the twigs in so many cases long after it is completely air dried. A vigorous shake does not remove them in some cases."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"Growers continue to visit our experimental plots here and a considerable portion of our time is devoted to showing them around," he writes from the U. S. Pecan Disease Field Laboratory. He also encloses a clipping from the TRI-COUNTY NEWS of Americus, Ga. that shows clearly the satisfactory manner in which the pecan work at Albany is going across to the growers.

"Results being obtained by Sumter pecan and peach growers, using the latest methods of cultivation, fertilizing and spraying have attracted the attention of growers in other sections of Georgia and Alabama," says the clipping. Prominent farmers from the two States, accompanied by specialists, made a tour of inspection of a number of groves. They were particularly impressed with the success Mr. Lee Hansford is making. Three years ago Mr. Hansford estimates that he lost close to 20,000 pounds of Schley pecans from scab, a disease that has perhaps destroyed half of the Schley crop in the state. For the past three years, however, he has been following carefully the program recommended by our workers at the Albany station, and he estimates that the crop for the present year is 95 percent perfect!

This is the first season two of the other growers have followed our spray program, but they are showing remarkable success, with a very fine crop of clean nuts to show for the first year's work.

The delegation spent a day at the Albany station, studying the results of recent work by the staff there in disease and insect control and in related operations. On the Haley Brothers' farm they found a crop of Stuart and Schley nuts nearly 100 percent perfect and this on nearly 100 percent of the trees. Many of the trees will harvest from 50 to 100 pounds of perfect nuts. This orchard, incidentally, had half of the trees removed at the time the experiment started a year ago and the space was planted to runner peanuts that have made a wonderful growth and were partially hogged down before the nuts began to ripen. At the time of the delegation's visit in mid-October the peanuts were making a partial second crop and this crop will be again turned over to hogs as soon as the nut crop is harvested.

No owner of even a small pecan orchard should let this season pass without a visit to Albany to make an examination of the work being done, says the article. When a member of the delegation commented on Mr. Hansford orchard and expressed the opinion that he was doing the most practical and most successful work of any grower in the State, and that one who follows his plan would not go wrong, Mr. Hansford replied that all the growers needed to do "to make a success of their pecan orchards would be to follow the lead of the Department men at Albany!"

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Sprayed trees and trees with good vigor are still carrying 50 to 75 percent of their folliage," he writes from the U. S. Pecan Field Station and Laboratory on November 12th. "The great majority of the pecan trees in this section, however, have lost from 90 to 100 percent of their foliage. We have had no general frost or freeze as yet and until we do it will be almost impossible to complete the scrapping of nuts, particularly on sprayed trees."

He had written November 5th: "Most of the week was spent in harvesting and sizing nuts from the orchard at Philema. To date, from the main station orchard, a total of 6,000 pounds have been harvested, sized and delivered to the owner. It is estimated that at least 1,000 pounds additional harvest will be made in this block, consisting of seedlings and scrapping. The nuts from this orchard were of good size and very excellent filling, some of the Schleys being so well filled that the shells were cracked. Of the 6,000 pounds harvested, about 3,500 pounds were of the Schley variety, and the remainder were almost all of the Stuart variety. Several Schley trees have already yielded more than 70 pounds each, and a few Stuart trees have yielded a little more than 50 pounds each.

"A start was made in cracking and scoring the nuts from the seedling trees in the hybrid orchard at Philema. Many trees which have not fruited previously are fruiting this year, and several trees have produced rather heavy yields. A few trees are yet to be harvested."

Milo N. Wood, Sacramento, Calif.

"The harvesting work on the almond is coming along nicely and we think that the very latest ones will dehisce enough so that they can be harvested very soon now," he writes November 5th. "The hybrid trees are certainly the latest this year of any year in the past. They are all in full foliage and are looking fine at this time."

B. G. Sitton, Shreveport, La.

"The harvest of pecans from the pruning plot in the Fullilove orchard was made the week ending November 19 and the total yield was 729 pounds from 20 tree, more than double any previous yield from these young trees. The pruned trees yielded as much as the unpruned. The average annual production for the past four years has been 14.9 pounds per tree from the pruned and 17.4 from the unpruned. There has been little if any difference in the quality of the pecans. Most of the weak crotches have been eliminated in pruning, so that the pruned trees have a stronger framework."

VARIETIES OF HICKORY FOR NEW ENGLAND

A certain big business man is a crank on cleanliness and recently issued orders that all of his workers should equip themselves with toothbrushes, keep them at the office, and use them at least three times a day. One day he notices that the janitor apparently did not have a toothbrush. "Do you have a toothbrush?" he demanded. "Oh, yes, sir," said the janitor. "Where is it?" The janitor held up a huge scrubbing brush. "Here it is, sir," he said. "Bah! snorted the big boss, irritated. "Don't tell me you can get that thing in your mouth." "Oh, no, sir," agreed the janitor, solemnly. "I take my teeth out."

Among his employees, I regret to say, this big boss is classified as a "nut." And speaking of nuts--In a talk before the Northern Nut Growers' Association recently, our colleague C. A. Reed discussed varieties of hickory for New England. It appears that New England is richer in varieties of hickory, both recognized and potential, than in any other species of nut-bearing tree. Nuts of no fewer than 80 to 90 individual trees from New England, or at the same latitude farther west, have been rated by one or more experts as worthy of test planting. Mr. Reed selected 60 of these for discussion at least briefly, and 24 for somewhat detailed mention.

It is not to be assumed that all of the varieties mentioned will be propagated even experimentally, but the greater majority and perhaps all those mentioned have been propagated at least by amateurs. Commercial nurserymen find the hickory a tough proposition and the growing of trees for sale to the public a generally unprofitable undertaking, as it requires from 5 to 8 years from seed planting to saleable trees. Digging and transplanting are difficult operations with the hickory, too, and mortality is likely to be high.

Apparently nut growers occasionally find themselves, like the rest of us, believing that the grass in the other fellow's pasture is greener. The story of the Taylor shagbark tends to confirm that suspicion. Mr. Reed became one of its admirers a few years ago when he saw 2 bushel baskets full of large and very fine nuts that had been gathered from under a few branches that extended over into Dr. Robert T. Morris' yard from a tree growing next door.

An inquiry concerning it revealed the interesting fact that Dr. Morris had spent hundreds of dollars and made an extended search for desirable hickories only to find just what he wanted right in his own yard. The Taylor tree stands so close to Dr. Morris' place that part of the nuts fall in his driveway. Ultimately he was forced to take notice of them--and so found that for local use the best shagbark of all was the one under whose branches he drove daily in leaving and arriving at his home! The parent tree stands on the property of Mr. S. W. Taylor of Stamford, Conn.

ADMINISTRATIVE NOTES

Certification of Vouchers. Budget and Finance Circular No. 84, dated June 27, 1938, quoted various types of certification required of contractors and vendors in support of invoices or public vouchers, Standard Form 1034. We are now informed that Certificate No. 3--stipulations required by law and/or under contract, etc., with respect to wages, rights and hours of work of employees--is required only in connection with purchases of bituminous coal or for construction work where the total amount of material to be furnished is in excess of $10,000. Therefore when soliciting bids for supplies other than bituminous coal, Certificate No. 3 will be omitted in "Notice to Bidders."

Fertilizer from TVA. The following is an excerpt from a letter of Mr. John B. Blandford, Jr., General Manager, Tennessee Valley Authority, dated September 30, 1938: "Because demands (for fertilizer) made upon the Tennessee Valley Authority have, during the past two years, been in excess of the TVA's ability to supply, we now recommend that circular letter No. 152 be withdrawn." A limited number of orders for triple superphosphate will be considered as individual cases upon application to the Tennessee Valley Authority, through our Business Office.

Discounts When preparing No. 1034 vouchers to accompany certified bills on which there is a discount for cash payment within a specified number of days, it is requested by the Business Office that the discount be shown at the top of the voucher in the space provided after the word "Terms" and not in the body of the voucher. When the discount is noted in the body of the voucher and deducted from the total there is always a doubt as to whether the terms indicated at the top of the voucher or on the certified bill apply in addition to the discount already taken.

All discounts on which there is not a time limit should be shown in the body of the voucher and deducted before totaling.

Prison-made Goods, etc. The fact that an article can be purchased commercially at a lower price than that at which obtainable from Federal Prison Industries, Inc. is no justification for commercial purchase, points out a ruling of October 28, 1938--A-98771 (S).

ADMINISTRATIVE NOTES

Checks Where under the suspicious circumstances surrounding the delivery, negotiation, request for stoppage of payment, and death of a payee, of a check issued in redemption of adjusted service bonds, the endorsement appearing on the check cannot be identified as that of the payee, and the only connection the payee could have had would have been if the pen used in making the endorsement was guided to produce the endorsement, in which event the act would have been that of the guidor and not the payee, the check must be considered as having been negotiated upon a forged endorsement and payment thereof was properly declined by the Treasurer of the United States who may issued his check for a like amount, in place of the original mutilated check, to the administrator of the estate of the payee and charge the disbursing officer's account with the amount involved. (General Accounting Office, A-95689 (S), Oct. 27, 1938).

Transportation Where the freight tariff publishing the through rates for shipments from Kansas City, Kans. to Batesville and Grenada, Miss. provided that the rates applied via all routes made by use of lines of any of the carriers parties to the tariff except as otherwise provided, and the rate via the land-grant route through Meridian, Miss. was not restricted as to routing and the carriers comprising this route are parties to the tariff, the use of Illinois Central division sheet No. 3114-A in apprortioning the gross charges among the land-grant carriers over Meridian was proper notwithstanding the circuitous routing of the shipments via Missouri Pacific and Illinois Central Railroad. (A-98783 (S), October 27, 1938.

Names and Titles The November 1 issue of the News Letter, page 252, carried a brief note concerning the desirability of having the names and titles of employees certifying vouchers typed on Form 1034 and the pay roll voucher. Helen Ferguson hastens to call my attention to the fact that a good bit more than the supposed poor penmanship of some of our employees is concerned.

The main point, she explains, is not the legibility of the signature but the matter of making sure that the name and title of the certifying employee appears on the carbon copy of the vouchers. Two carbon copies are required with each voucher, of course--one for our files and the other for the Bureau Accounting Office. Each carbon must show the name and title of the employee certifying the voucher. If the plan is followed of typing name and title on all vouchers, we will be sure that they appear on the carbon copies. And where they do not, and a clerk here has to take the time to add the name and title to the two carbon copies of a hundred or more vouchers a day--that's sumpin!

Vol. 10 No. 23 December 1, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature and is not to be published without obtaining the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. X Washington, D. C., December 15, 1938 No. 24

Horticultural Production. An interesting release from the Press Service late in November makes the point that a lot of people seem to believe that agriculture is composed almost entirely of wheat, cotton and corn production. These crops do receive much attention in the newspapers, but agriculture has a great many more irons in the fire, some of them red hot. Among the latter will be found the horticultural crops, covering a vast acreage, and engaging thousands of farmers and farm laborers. The fruit, vegetable, and ornamental plant industries easily constitute a four-billion-dollar enterprise.

Even in the field of fruit and vegetable growing there is a tendency to overlook many splendid dividend payers. Passing over such topliners as apples and potatoes, for example, we find Agricultural Statistics revealing that dry beans passed $50,000,000 in farm value last year, and that the farm value of truck crops (commercial, for market and for canning or manufacture alone) reached a value of $350,090,000 in 1937! The once lowly peanut now represents $44,000,000 a year in returns to growers; strawberries, $25,000,000; onions, $23,000,000; cabbage, $20,000,000--and so on.

Tree nuts (English (Persian) walnuts, almonds, pecans and filberts) are in the $20,000,000 class also, having doubled in production during the last 20 years. This increase in production is expected to continue for the next five years as the bearing acreage increases, and already it has been successful in replacing a large volume of the nuts formerly imported. The English (Persian) walnut continues to lead in popularity, with filberts showing a surprising increase in production. As a matter of fact, it was not until the 1920's that filberts began to gain recognition as a profitable crop in Washington and Oregon. In the past 10 years the crop has shown a rapid increase in acreage.

HORTICULTURAL SEMINARS AT BELTSVILLE

The Monday afternoon horticultural seminars at the U. S. Horticultural Station, Beltsville, Md., are off to a splendid start under the chairmanship of Dr. F. J. Stevenson. Dr. Stevenson is inaugurating an interesting feature by enlisting guest speakers.

"It is planned to get outside speakers as often as possible this year," he says, "in an effort to acquaint the members of our staff with some of the newer developments in agriculture that they might not encounter in the course of their own work in our Division. This will tend to broaden our outlook on the problems of the fruit and vegetable industry and safeguard us from a mere rehashing of our own work.

Dr. B. L. Wade and Dr. Charles F. Poole of the U. S. Regional Vegetable Breeding Laboratory, Charleston, S. Car. inaugurated the season with a discussion of the work under way at the Charleston station, describing some of the preliminary results of the breeding work, and outlining the general program for the station's activities.

Mr. Gould gave an informal talk at the second Monday meeting, telling of some of the highlights of his connection with the horticultural investigations of the Department. He referred whimsically to the fact that we were almost forced to adopt the name Division of Fruit and Vegetable Crops and Diseases in order to indicate more clearly the crops we are dealing with--horticulturally!

The first guest speaker was Dr. M. C. Merrill, chief of the Division of Publications of the Office of Information of the Department. Dr. Merrill gave us an interesting talk on the publication work of the Department and in particular sketched the basic difference in the various series--Journal of Agricultural Research papers, Technical Bulletins, Circulars, Farmers' Bulletins, Leaflets, etc.*

December 5th Dr. Crane told us something of the plans for our new project--Tung Oil Culture and Breeding Investigations. Tung oil is a valuable drying material that has been used for many centuries by the Chinese and Japanese in waterproofing wood, paper, fabrics and other substances, so that it is rather astonishing to learn that it has been within the last 35 years only that it has come into any general use in Europe and America. Because of its wide variety of uses in the chemical industries and especially in the manufacture of waterproof varnishes and paints and in paint driers and linoleum this product makes the growing of the tung tree very promising and the reward for development of superior trees for this country enticing.

Another guest speaker, Dr. Charles Thom, principal mycologist in charge of the Division of Soil Microbiology, Bureau of Plant Industry, is listed for an early meeting.

*See also News Letter for October 15, 1936, pp 231-234.

VEGETABLE INVESTIGATIONS

A new mosaic-resistant Refugee bean

Late in November, Circular No. 500, "U. S. No. 5 Refugee, a New Mosaic-Resistant Refugee Bean," by B. L. Wade and W. J. Zaumeyer of our Division, became available for distribution. This circular discusses the new bean concerning which we have been receiving such favorable reports since its release to the seed trade in the fall of 1935.

It is very similar to Stringless Green Refugee in plant and pod characters, but in addition is apparently immune to common bean mosaic. Its superiority over other Refugee beans may be summarized as follows:

(1) Resistance to common bean mosaic, amounting to immunity;
(2) Greater pod length;
(3) Less pod curvature;
(4) Distinctive seed;
(5) Greater tendency for small-sized pods to approach roundness;
(6) Freedom from purple splashing, so that less blanching is required; and
(7) Eight days' earlier development than Keeney Stringless Green Refugee.

Yield tests have indicated that the expected yield is about that of other Refugees, except that where common bean mosaic is a factor it can be depended on to outyield mosaic-susceptible Refugees.

One report we have concerning the reaction of 23 representatives of well-known canning companies in New York State who examined canned samples of U. S. No. 5 Refugee in comparison with several other varieties of snap beans, has all 23 placing it first in quality, with no objection to its color, and special mention being made of its fine flavor and tenderness. The bean appears well adapted to New York conditions.

A large western firm, engaged in canning and seed production has expressed itself as well pleased with No. 5 as it grew under Utah conditions, and believes it is good for a 50-percent increase in yield over Stringless Green Refugee in years of heavy mosaic infection. In one test of Stringless Green Refugee and U. S. No. 5, the harvest peak of No. 5 was 10 days earlier than that of Stringless Green Refugee.

The Department does not have seed for sale, nor quantities for general distribution for commercial tests. A number of commercial seedsmen, including some of those who specialize in the production of beans and peas, are developing commercial supplies of the variety. It is probable that only limited quantities will be available commercially in 1939, but it is expected that ample supplies should be available in succeeding years.

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

Writing from the Fruit Disease Field Laboratory on November 26th, he says: "We were able to complete the root rot survey in Ruppels orchard fortunately before the weather got too threatening, and found 16 additional trees showing fruiting bodies of Xylaria at the base, making a total of 18 trees in this orchard definitely known to be affected. Most of the fruiting bodies were similar to those collected during the summer and identified as Xylaria mali; however, X. longeana fruiting bodies were present on the fragments of one stump and at least one tree had fruiting bodies resembling X. polymorpha....

"The weather for the week has been more seasonal than for the past several weeks. Starting with overcast skies and dropping temperatures, a period of stormy weather finally culminated with a light snow during the night of November 23, followed by clear weather on Thanksgiving Day and another snow flurry during the night of the 25th. Temperatures have been as low as 18°F."

John H. Weinberger, Fort Valley, Ga.

"During the week several hundred seedling trees that Dr. Gardner shipped to me for nema tests were planted in the test block," he writes November 21. These included seedlings of several varieties that had not been tested previously. In summarizing the results of this year's tests it was found that out of seedlings of 68 varieties of peaches tested, Shalil seedlings were the only ones that were 100 percent resistant to nematodes.

"Another lot of twigs was brought into the greenhouse and sprayed with DN compounds to study the effect of temperatures following treatment. Evidence seems to indicate that the reason the sprays are not as effective in the orchard as in the greenhouse is that the temperatures outside are not always favorable for immediate development, and that unless the treated buds develop at once, much of the effect of the spray is lost. That probably accounts for the better results obtained in the orchard with sprays applied after the first of the year. The possibility of rain washing the chemicals off the twigs has been investigated, and shown to have little effect."

E. S. Degman, Medford, Oreg.

"On November 17 we planted 105 trees of P-18 on p-18 X Farmingdale roots in Block 3," he writes from the Pear Field Station November 21. "Trees were secured from the Southern Oregon Experiment Station. P-18 X Farmingdale gives one of the most blight-resistant roots which Professor Reimer has developed. P-18, which is one of his blight-resistant French seedlings, has proved very desirable as a trunk stock, and in addition seems to be resistant to our mysterious canker trouble."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

George P. Hoffman (Vegetable Crop Investigations)

"Weather during the past week has been a bit unsettled with temperatures ranging from 70° to 49° C. (maximum) and 17° to 51° (minimum). For the month of November, utter extremes for this section have been reached--maximum, 82°F., minimum, 16°F., which represent the lowest in this section for November in years," he writes December 3d. "Precipitation for the month has totaled 3.63 inches. Out of the ordinary, Thanksgiving was a 'white one' this year.

"Grape vines, pecan, chestnut and tung trees had the late adhering foliage parched almost overnight, and the high, dry winds during the past few days have scattered this far and near. Cold injury to the trees and vines in the station orchards and vineyards is feared.... In spite of temperature extremes, sweetpotatoes are keeping well and the delayed harvest plots are apparently uninjured from cold. Roots harvested and thrown back in every third furrow (the harvest of three rows thrown in one) and covered with soil have kept thus far remarkably well."

He had written November 26th: "In spite of near winter weather, mature and original foliage in the pecan and pear orchards might cause one to think that we are having mid-summer in the Sunny South. As yet, due to the presence of heavy foliage still holding on to the pecan trees, the small nut crop harvest has to be delayed. However, low temperatures, sleet and snow followed by still lower temperatures for Thanksgiving and the night following, killed all frost tender exposed vegetation and deciduous tree defoliation is now conspicuously evident."

J. M. Lutz (Handling, transportation, storage and utilization investigations)

"An inspection of the potatoes about 10 days after the beginning of the cold snap revealed that they were not showing any deleterious effects of the cold with respect to decay or flavor," he writes December 3, concerning the sweetpotatoes stored by various cheap methods without the benefit of artificial heat. "The lowest temperature which the delayed digging potatoes were subjected to was 35°F. (3 inches under the soil), and 18° F. higher than the air temperature. The temperature is an unheated shed got down to 30°, 13° higher than the outside air."

"In connection with studies on the relationship of maturity of grapes to quality of grape juice and jelly," he wrote November 26th, "it was found that juice made from grapes somewhat immature had about twice as much acid as similar grapes three weeks later. The pH increased from 3.11-3.16 to 3.69-3.65 during the same period."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"This is the season when visitors take up a considerable portion of our time," he writes November 26th.

"Many apparently find it convenient to get concerned about their unprofitable 1- to 5-acres of pecans while on their way south for the winter, and as a result we lose a considerable amount of time from more important work. However, there are a few who come who have larger acreages and are serious in their intentions to do something with their orchards and there is a satisfaction in being able to give our suggestions and recommendations to these men.

"The short crop of nuts this year and the pecan stabilization program have operated to increase the price of pecans from three to five cents a pound over previous years. I have noted a movement to develop pecan auctions patterned after the tobacco auctions and the prices obtained are reported to be good. It appears possible that this method of selling may increase in use in the future."

He had written November 19th: "The yield records for several of our experimental plots have not yet been completed as there is so much foliage still in the trees that clean scrapping cannot be accomplished. The sizing and grading records for most plots are complete. In the orchard at Philema the size is about 1/32 inch less than last year due as much to the larger crop as to the dry season. The best nuts harvested in this section, as determined by the number of nuts per pound, came from the orchards at Philema. In fact, for a size and variety, most of the nuts at Philema showed a smaller count per pound than the lower limit listed in the U. S. Standards. As has been mentioned previously the filling was so great this year that many nuts were split open by the pressure."

C. E. Schuster, Corvallis, Oreg.

"It is apparently turning out that the walnut crop is away over the estimates of every one," he writes November 19th.

"The crops going through certain packing plants were not even run over the suction machine and yet the quality was so good that they have passed the grading requirements of the State. Many crops showed a cracking test at the packing house door of 97 and 98 percent. All of this combined with good set originally has brought about probably the heaviest walnut crop the State has seen. This is contrasted to a filbert crop that was below last year's yields."

NUT INVESTIGATIONS

George F. Potter, Bogalusa, La. (Tung investigations)

"A great deal of variation is being observed in the character of foliage on individual trees," he writes November 19th. "A number that have outstandingly good dark green foliage have been marked together in the suitable controls for further observations on flower bud development, winter injury, and the time and character of flower and shoot development in spring.

"During the latter part of the week the offices were moved from the Great Southern LumberCompany building to the Second floor of the Post Office.

"The crop is now practically completely harvested. Yields were undoubtedly reduced by the very dry weather prevailing during August, September and October."

John H. Painter, Cairo, Ga. (Tung investigations)

"The unusual dry spell which has been experienced at this station has at last been broken," he writes November 19th.

"Both ends of the week covered in this report represent considerable slipping and sliding along the roads and bypasses adjacent to the station. It at least had the effect of cheering up the farmers who have been doubting if the 'winter peas' being used as a cover crop in tung groves were ever going to sprout. In no orchard visited this week was there much activity. All were contemplating the beauty of a highly saturated 'Orangeburg.' This afforded some opportunity to talk to them and while they were in a genial mood quite a few of their innermost thoughts on the tung problems came to light.

"Generally they seem to agree upon several facts. Thirty dollars a ton is not enough to get for the fruit, they say. They all want to get a portable huller so they can keep the hulls and save hauling husks. They say we have to find a tree that blooms two weeks later than the average tung tree does here in Cairo. They want the fruit off the trees about two weeks earlier than it normally comes off. They want lots of fruit every year, and a tree that is capable of taking care of itself pretty well. Aside from that, most of them have admitted that for what little they have done for their tung trees they haven't fared so badly.

"Sicty-three selections have been made so far at this station. The full quota of 10^0 could have been reached, but it seemed advisable to go more slowly and try to have each selection count for more.

NUT INVESTIGATIONS

Howard E. Parson, Shreveport, La.

Writing from the U. S. Pecan Disease Field Laboratory in connection with notes on the control of foliage diseases, sizing of the nuts and harvesting, he says: "Even though diseases were not held in check as well as desired, the foliage was retained on sprayed trees much better than on unsprayed trees, particularly on those trees sprayed with bordeaux mixture 2-1/2-50 plus 2 libs. wettable sulphur. The spraying in the Fullilove orchard has not prevented premature defoliation because of black aphids, but premature defoliation was delayed long enough to prevent new foliage from coming out much ....

"A total of 9,695 pounds of pecans was harvested from my plots in the Webb orchard this year. The average yield per check tree was 34.57 pounds; from the sprayed tree 77.16 pounds. Thus there was difference of 42.59 pounds in yield between sprayed and unsprayed trees. The cost of spraying has not yet been estimated, but at the prevailing price of 10 cents per pound this difference in yield should surely pay for spraying and still return a profit. As compared with the yield from the same trees last year the total was 9,824 pounds; the average yield per check tree was 87.38 pounds; the average yield per sprayed tree was 65.98 pounds, a greater yield of 21.4 pounds per check tree.

In going over the yields per individual tree it has been interesting to note that almost without exception the high-yielding trees of last year were also the high-yielding trees this year. Because the sprayed trees have come up in production from below the yield of the check trees last year to much more than their average yield this year and because the best yields last year have not resulted in depressed yields this year, increased yields on sprayed trees is considered significant. Most of the nuts from sprayed trees this year are as big or bigger than those from check trees. The quality of thenuts from the sprayed trees, however, tends to be poorer than those from the check trees. This estimation of quality is based on the number of nuts per pound in the comparable size classes."

C. L. Smith, Brownwood, Tex.

"During the week of October 24-29 pecan trees that were treated with indole-3-butyric acid at the time of transplanting in February were dug and data on the rooting responses recorded," he writes. "Excellent responses were obtained with the higher concentrations of the acid."

"The weather has now reached the stage of winter with freezing temperatures each night," he reported November 26th. "The foliage has all been shed by pecan trees. Cover crops an the station are up and doing fairly well."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Studies on the effect of spraying walnuts with bordeaux mixture on the degree of filling of the nuts were completed during the week," he reports November 26th. "Some variations in the degree of filling of the nuts in the sample from the sprayed and untreated plots, respectively, were found. Thus, in a representative sample, containing 2,128 nuts, from the sprayed plot, 84.6 percent were found to contain well-filled kernels, while in a representative sample, containing 2,171 nuts, from the untreated plot, 79.2 percent were well-filled.

"Eight and one-tenth (8.1) percent of the nuts from the sprayed plot contained slightly shriveled kernels (up to one-fourth shriveled) while 12.7 percent of the nuts from the untreated plot were slightly shriveled. Two and six-tenths (2.6) percent of the nuts from the sprayed plot contained one-half shriveled kernels, while 4.7 percent of the nuts from the untreated plot contained one-half shriveled kernels. Ninety-one hundredths (0.91) percent of the nuts from the sprayed plot were three-quarters shriveled, while 1.7 percent of the nuts from the untreated plot contained three-fourths shriveled kernels. Three and six-tenths (3.6) percent of the nuts from the sprayed plot contained completely shriveled kernels, while 1.6 percent of the nuts from the untreated plot contained completely shriveled kernels.

"It is planned to subject these data to statistical analysis to determine the significance of the variations."

F. N. Dodge, Robson, La.

The post office at Robson, La. has been discontinued. Mr. Dodge's address is now: Route 1, Shreveport, La. P. O. Box 223-W

ADMINISTRATIVE NOTES

Belt Seed Company — In the News Letter of December 1, 1937, it was stated that the Belt Seed Company of Baltimore, Md. had been barred from bidding on any requirements of the Department for a period of one year from November 13, 1937.

We have now been advised that the name of this company has been restored to the list employed by the Division of Purchase, Sales and Traffic in solicitation of proposals for seeds. Therefore, requests for bids or quotations may now be sent to the Belt Seed Company.

ADMINISTRATIVE NOTES

Prison-made Products. Walter Roney came in the other day with the story of the man who remarked to his office associate: "My wife wants a new fur-collar coat for Christmas, but I can't afford it." "What do you do in a case like that?" inquired his sympathetic, unmarried associate. "Nothing," responded the married man, sadly. "She goes and gets the coat."

"The thing seems to be catching," said Walter. " I mean some of our employees insist upon using the same tactics with regard to prison-made goods. You remember that in the December 1 News Letter we had an item calling attention to the fact that although an article may be purchased commercially at a lower price than obtainable from Federal Prison Industries, Inc., that is no justification for its purchase from the commercial concern. But in spite of that--and other warnings--some of our workers go out and get the "coat"--and sometiies find that they have to pay for it out of their own pockets."

It is mandatory for all Government Departments and Agencies to secure their requirements from the Gederal Prison Industries to the extent to which products can be supplied--brooms, warehouse, etc. from 8 lbs. to 36 lbs. per dozen; brushes, paint, varnish, laboratory, dust, scrubbing, polishing, etc.: canvas goods (bags, baskets, drop cloth tents, tarpaulins): castings (markers, name plates, grates, manhole covers): cotton textiles, cotton gloves and mittens, and clothing; desk trays, desk cabinets, folding screens; furniture, chairs, etc. both wood and wicker; furniture, metal file cases, file cabinets, shelving; mattresses; mats (metal, deck or floor), etc.

The General Accounting Office will not approve nor allow credit for purchases from commercial sources of articles produced by Federal Prison Industries unless clearance has been granted in advance. Therefore all purchases of such items as those listed above should be made through our Business Office. If any such purchases are contemplated and there is any doubt as to availability through Federal Priosn Industries, the matter should be taken up with the Business Office before placing the order.

Certification of Vouchers. For those of you who came in late, a correction should be made in connection with the various types of certification required of contractors, mentioned on page 278 of the December 1 News Letter. Certificate No. 3--stipulations required by law with respect to wages, rights and hours of employees, is required in all cases where the specifications cover construction work or services, or where the total amount of material to be furnished is in excess of $10,000. This certificate is also required for all purchases of bituminous coal.

ADMINISTRATIVE NOTES

Household Goods, Transfer of. In view of the fact that the "Motor Carrier Act, 1935," provides for the establishment of specific rates, fares, and charges to govern common carriers by motor vehicle when engaged in interstate transportation, the question is frequently raised by such agencies as to whether the Federal Government may solicit, or they may submit, competitive bids on the interstate movement by motor van of the household goods of a Federal employee.

In this connection the Director of the Bureau of Motor Carriers of the Interstate Commerce Commission has recently expressed the opinion that a motor carrier may lawfully transport for the United States Government at free or reduced rates. In the light of this opinion the Department of Agriculture feels that it is entitled to solicit, and may properly be accorded, preferential rates in cases where interstate shipments at Government expense of the household goods of an employee are involved, says the Acting Director of Finance, Mr. H. A. Nelson, in a memorandum to heads of bureaus and offices, dated November 25, 1938.

Accordingly the provisions of Department Regulation No. 3451 (Transportation of Effects on Permanent Change of Station), including the requirement of competition when the amount for truck or van transportation exceeds $50, will continue in full force and effect.

Potash Memorandum 797 from the Office of the Secretary states that no memoranda, regulations, orders, or other documents which have been issued in the past, or which may be issued hereafter, delegating to officers or employees of the Department authority to issue permits, licenses, leases, or agreements of any sort for the use of lands administrated by the Department shall be construed to authorize the issuance of by such officers or employees, without the express approval of the Secretary, of any permit, license, lease, or agreement of any sort that will allow the development, exploitation or other use of potash deposits in such lands.

Envelopes A note from the Director of Finance calls attention to the use of considerable quantities of plain envelopes, i. e., those that do not bear the name of the Department. With the exception of definite special uses--for seeds, filing photographs, etc.--he points out that there should apparently be little need for plain envelopes. In the interest of economy he asks that the purchase of plain envelopes be discontinued except where they may be needed for some definite official use. In future, therefore, all orders for plain envelopes must be accompanied by a statement explaining the official need for them.

Vol. 10 No. 24 December 15, 1938

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

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